



COLONY OF MAURITIUS

Annual Report of the
Department of Agriculture
for 1937.

[Price Rs. 1.00]

PRINTED AND PUBLISHED BY
R. W. BROOKS, GOVERNMENT PRINTER,
PORT LOUIS, MAURITIUS.
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Foreman : A. BÉGUÉ.

Stockman : D. LÉVEQUE.

ANNUAL REPORT OF THE DEPARTMENT OF AGRICULTURE FOR 1937.

No. 79/38.

THE HONOURABLE THE COLONIAL SECRETARY,

I have the honour to submit the report on the Agricultural conditions of the Colony and the work of the Department of Agriculture for the year 1937.

PART I.

GENERAL REPORT ON THE AGRICULTURAL CONDITIONS OF THE COLONY AND THE WORK OF THE DEPARTMENT OF AGRICULTURE DURING 1937.

1.—Meteorological Conditions.

Rainfall and temperature conditions which prevailed at the Central Experiment Station, Réduit, during the past season, are shown in the following table. More extensive figures are given in the Appendix.

TABLE I.

STATION: DEPARTMENT OF AGRICULTURE, RÉDUIT.

Months and Years		Air Temperature °C		Departure from Normal °C		Rainfall mm		Departure from Normal %
1936								
November	...	22.4	...	+0.6	...	41.8	...	-29
December	...	23.3	...	-0.1	...	283.5	...	+75
1937								
January	...	24.0	...	-0.1	...	325.5	...	+24
February	...	24.9	...	+0.6	...	223.8	...	-20
March	...	24.2	...	+0.5	...	422.4	...	+39
April	...	22.7	...	+0.1	...	63.7	...	-54
May	...	21.1	...	+0.6	...	206.4	...	+92
June	...	18.6	...	0.0	...	69.1	...	-15
July	...	18.5	...	+0.7	...	54.2	...	-22
August	...	17.8	...	0.0	...	80.3	...	+22
September	...	19.3	...	+0.7	...	69.2	...	+59
October	...	20.2	...	+0.4	...	50.2	...	+4
November	...	22.4	...	+0.4	...	77.9	...	+24
December	...	23.2	...	-0.2	...	43.9	...	-73

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From the above figures it appears that, while weather conditions were generally very favourable to growth, the persistency of high temperature and moisture during the ripening season was detrimental to the sucrose content of the cane. As a result, yields in the fields were, in general, fully up to expectation but, in many cases, the sucrose content of the cane was very disappointing.

2.—Sugar Production.

The total cane reaped approximated 2,823 thousand metric tons, in excess by 276 thousand tons, on last year's production ; this year's production thus exceeds all previous records. The sucrose content of the cane was however considerably below last year's, averaging only 12.99 as against 13.71 in 1936. The mean extraction of sugar per cent of cane was 11.12 as against 11.79 last year. The total output of sugar was 313.82 thousand metric tons, in excess by 4.5 per cent on last year's.

The following table exhibits the comparative production for the past seven years.

TABLE II.
YIELDS OF SUGAR IN THOUSAND METRIC TONS.

Districts	1937	1936	1935	1934	1933	1932	1931
Pamplemousses and Riv. du Rempart	82.65	63.97	69.97	30.13	57.77	62.73	41.81
Flacq	48.16	49.98	44.15	30.87	41.37	35.97	27.91
Moka	37.72	43.42	35.76	29.30	40.08	34.12	20.83
Plaines Wilhems	22.49	21.89	20.62	11.54	18.22	17.05	11.64
Black River ...	13.81	12.85	11.28	5.99	8.88	9.06	6.29
Grand Port ...	57.23	56.10	53.38	38.37	50.66	46.66	28.52
Savanne ...	51.76	52.13	45.34	32.66	44.48	41.63	27.01
Total ...	313.82	300.34	280.50	178.86	261.46	247.22	164.01

The deficit in 1931, due to a severe cyclone, was estimated at 34%. In 1934, there was a severe drought.

In 1937 the season, as a whole, was decidedly better than in 1936. Furthermore, the extension of better varieties, notably BH.10/12 was continued and the total acreage under cane cultivation showed a notable increase.

3.—Grades of Sugar.

The proportion of Raws was, this year, 83.7% of the total sugar production ; Granulated Whites (Vesous) were 16.0%, while Low Sugars approximated 0.3%. The change brought about by the introduction of the New English Tariff in 1928 is illustrated in the following table :

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TABLE III.

Years	Vesous		Raws		Lows	
	%		%		%	
1925	...	98.21	...	—	...	1.79
1926	...	98.10	...	—	...	1.90
1927	...	98.63	...	—	...	1.37
1928	...	71.80	...	27.30	...	0.90
1929	...	23.90	...	75.20	...	0.90
1930	...	16.80	...	82.50	...	0.70
1931	...	16.20	...	83.10	...	0.70
1932	...	12.10	...	87.50	...	0.40
1933	...	11.80	...	87.70	...	0.50
1934	...	20.56	...	78.76	...	0.68
1935	...	12.60	...	87.10	...	0.30
1936	...	21.68	...	77.85	...	0.47
1937	...	16.00	...	83.70	...	0.30

4.—Area under Sugarcane.

At the beginning of 1937 the area under cane was estimated at 143,497 acres in excess by 4,156 on the figure for 1936. Estates with factory cultivated 62,089 acres ; estates without factory, 38,978 acres, giving a total estate cultivation of 101,067 acres, in excess by 3,456 acres on the corresponding figure for 1936. The balance of 42,430 acres, which shows an increase of 700 acres on the corresponding figure for the year previous, was cultivated by smaller planters, mostly Indian peasant proprietors. The total area under Indian cultivation at the beginning of 1937 was estimated at 55,053 acres or 38.4% of the total area under cane. This total was made up of (i) 35,730 acres belonging to Indian small planters off estates, (ii) 10,223 acres cultivated by Indians on estate lands and lastly (iii) estates belonging to Indians, comprising altogether 9,100 acres.

5.—Number of Sugar Factories.

During the year, two more factories were dismantled bringing the total, at the close of 1937, to 38. Sixteen factories were closed during the past 16 years.

6.—Sugar Market.

Market conditions were upon the whole decidedly better in 1937, as compared with 1936, although during the last months of the year, quotations came down very markedly. The average net price realised in 1936 was Rs. 5.69 per 50 kilos ; in 1937, the average net price realised by December 31st, on 243,892 metric tons sold by that date approximated to Rs. 6.20 per 50 kilos.

7.—Disposal of the 1936-37 Sugar Production and Local Sugar Consumption.

The total quantity of sugar exported during 1936-37 (August 1st, 1936 to July 31st, 1937) amounted to 289,010.3 metric tons, distributed as follows:

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	TONS
Great Britain ...	271,820.0
Canada ...	16,529.8
Hong Kong ...	660.5
Total ...	289,010.3

The exportation for the 1937-38 crop, up to December 31st, 1937, was as follows:

	TONS
Great Britain ...	134,566.2
Canada ...	22,415.4
Hong Kong ...	457.2
Other Places ...	118.6
Total ...	157,557.4

The local consumption of sugar for the 1936-37 year was 10,326 metric tons, as compared with 9,327 in 1935-36 and 11,211 in 1934-35.

8.—Labour and Cost of Living.

Considerable labour unrest was in evidence as soon as the grinding season had begun. The agitation culminated in riots in various localities of the Island and, during the early stages of the crop, great difficulties were experienced on several estates for the harvest. As a result, the grinding period was unduly prolonged and, by the end of the year, two factories had not finished grinding. A Commission of Enquiry on the labour troubles was appointed, the findings of which have not been made public.

The cost of living continued, especially as regards foodstuffs, generally below pre-war level. In 1937, rice, the staple food of the population, was indexed at 66 as against 100 in 1914; other grains were indexed at 77. Flour rose to 124 while oil and fats were reduced to 68. Fresh meat was at 106.

9.—Sugar Machinery.

Machinery, to the value of Rs. 914,545 was imported during the year as against Rs. 589,449 in 1936. Tramway material to the value of Rs. 128,059 was imported in 1937, as compared with Rs. 328,219 the year previous.

10.—Fertilisers.

The importation of chemical fertilisers in 1937 totalled 19,818,236 kilos, valued at Rs. 2,117,295 as compared with 21,588,262 kilos valued at Rs. 2,078,332 in 1936.

11.—Insect Pests.

Following the extension of the abolition of hand collection of *Phytalus Smithi* Arr. to more than 80% of the infested areas, efforts to increase the natural control of this pest have been redoubled. The Javan parasite *Campsomeris phalerata*, which is so well established in three localities, has been distributed systematically all over the Island. The importation and

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release of promising species of parasites and predators has been intensified: *Pyrophorus luminosus* Ill. from Puerto Rico; *Dexia rustica* F. from England; four species of *Campsomeris* and one of *Tiphia* from Natal and Zululand; and a Tachinid parasite of the adult beetle from Richmond, Natal. The Giant Toad *Bufo marinus* L. is at present en route for Mauritius.

The 2nd Phytalus Officer has spent 7 months in South Africa, and the Assistant Entomologist has recently embarked upon a further mission to Zanzibar and North Africa, in order to discover sources of fresh parasite material.

Apart from these measures, which aim at reducing the pest population, some local mitigation of losses has been attained by growing canes in "petite saison", so as to avoid two seasons of larval attack. The introduction to infested areas of canes possessing great vegetative vigour, has hitherto been handicapped by their generally low sucrose content, but several promising new canes are under trial. This is an essential line of work in the struggle against the pest.

No significant improvement in the moth borer situation is shown by the survey figures, which indicate a mean joint infestation of 11.7%. In a year so favourable to cane growth, damage is not as conspicuous as in dry years, but the menace remains unchecked, and the Entomologist was requested to prepare a comprehensive scheme of borer control by biological means. Such a scheme can only be carried out on the necessary scale with assistance from outside sources, and after approval by the Board of Agriculture, it has been submitted to the Committee of the Colonial Development Fund for consideration.

A serious outbreak of *Lasioderma serricorne* F., the Tobacco beetle was reported from the Government Tobacco Warehouse and a fumigation with Hydrocyanic Acid was successfully carried out in the most affected part of the stores.

Coconut palms in all parts of the Colony are suffering severely from the attacks of *Aspidiotus destructor* Sign. and every effort is being made to increase the natural control of this pest.

12.—Plant Disease.

The work conducted in 1932 on a bacterial disease of maize and that undertaken sporadically since 1934 on bacterial diseases occurring on the palm and the grass *Thysanotena* in the Island, then considered as side-searches of minor economic interest, turned out this year to be of major importance. The plants mentioned have been proved to be natural hosts of the Sugar Cane Gumming disease bacterium. The presence of these wild hosts, chiefly the latter two, complicate the problem of the eradication of the Gumming disease on cane from the island.

The new policy of testing gumming resistance in the seedlings produced by the Sugarcane Research Station was adopted this year, and gave indications as to a correlation between the susceptibility to leaf and to stem infections. The methods devised, however, for testing resistance to Scald and Smut diseases, need further attention.

Black shank and Mosaic diseases of tobacco were somewhat less troublesome than in previous years. Wilt of the pineapple is apparently brought about in the island by different causes, such as conditions of soil and climate; what may be another type of the disease is receiving attention.

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13.—Tobacco Industry.

During the year under review the Tobacco Board issued certificates for the cultivation of $699\frac{1}{4}$ acres, as compared with 700 acres in the previous year. Of this, $542\frac{1}{2}$ acres were allocated for flue cured leaf and $156\frac{3}{4}$ acres for air cured leaf. The division of acreage and number of growers are shown in the following table.

Type		No. of Growers		Acres planted			
		1936	1937	1936	1937		
Flue Cured	...	56	53	...	$510\frac{1}{2}$	$529\frac{1}{2}$	
Air Cured	...	280	281	...	$150\frac{3}{4}$	$156\frac{3}{4}$	
Total		...	336	334	...	$661\frac{1}{4}$	$686\frac{1}{4}$

From the foregoing it will be seen that the total acreage granted was not planted.

A general quota of 500 kilos per acre was allocated which limited the crop to 349,625 kilos. Conditions were extremely favourable, particularly in the air curing districts of the North and crops exceeded all expectations, so much so, that by the end of the year 128,000 kilos of tobacco had been delivered by planters in excess of their quotas.

The amount of leaf purchased by the Warehouse during 1937 was 391,435.3 kilos of a value of Rs. 487,239.09, as compared with 375,923 kilos of a value of Rs. 475,325.83 in the previous year. The above figures do not include the leaf delivered in excess of the quota, which was not paid for ; the total quantity of leaf actually received at the Warehouse was 519,435.3 kilos.

The amount of leaf used by manufacturers was 329,238.4 kilos as compared with 321,544 kilos in the previous year.

The Entomologist was called upon by the Tobacco Board to advise them on measures to be adopted to control the tobacco beetle *Lasioderma serricornis* Fab. which was infesting a proportion of the baled stocks.

But little progress was made in obtaining a type of tobacco suitable for the export market. Trials with new varieties were continued at La Ferme but a more extensive research scheme, involving the opening of a new research station at Richelieu, was considered and proposals put forward.

14.—Aloe Fibre.

Market conditions were fairly satisfactory during the first half of 1937, but, from the month of July onwards, they deteriorated until, in December there was practically no market. The total fibre exported in 1937 was 1616.7 metric tons, as against 1213.8 in 1936 and 446 in 1935.

A committee has been appointed to investigate the conditions under which the bag factory might be reopened. The work of the committee is still in progress.

15.—Pineapple Industry.

Appreciable progress is in evidence regarding this industry. At the end of the year, 11 acres had been planted for experimental purposes by the Department of Agriculture. A large amount of planting material will be available this year and it is expected that new land will be planted with pine-apples.

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The season having been very favourable, the anticipated turn out of the Fruit Canning Factory for 1937-38 is 4,500 cases or, approximately, 108 thousand kilos. Figures for previous years are as follows:

Years	Cases
1931-32	4,224
1932-33	4,982
1933-34	2,300
1934-35	2,188
1935-36	2,960
1936-37	3,118

The exportation in 1937 was valued at Rs. 32,451.

16.—Tea Industry.

Conditions continue favourable concerning this industry. At the end of the year, the total area under tea approximated 440 acres, distributed as follows:

Bois Chéri Estate (Mr. Larcher) ...	241 acres.
Curepipe („ Corson) ...	105 „
Nouvelle France („ Ramdine) ...	94 „

There are also old plantations at Nouvelle France, now practically unproductive.

At Bois Chéri Estate, the yield for 1936-37 was 34,650 kilos. Figures for previous years are as follows:

Years	Kilos
1932-33	9,500
1933-34	10,000
1934-35	27,880 $\frac{1}{2}$
1935-36	24,750

At Curepipe tea garden, the production for 1937 was 15,062 kilos. Figures for previous years are as follows:

Years	Kilos
1931	8,713
1932	8,688 $\frac{1}{2}$
1933	12,251 $\frac{1}{2}$
1934	13,425 $\frac{1}{2}$
1935	12,600
1936	13,000

17.—Coconut Industry.

The export of copra, produce of the Dependencies of Mauritius, amounted during the year to 1,507 tons valued at Rs. 350,012 as against 1331.5 tons, valued at Rs. 229,881 in 1936. The export of coconut oil during the year was 5,731 litres, valued at Rs. 2,383, as compared with 7,113 litres, valued at Rs. 2,686 in 1936.

18.—Alcohol.

The total quantity of alcohol distilled for human consumption amounted to 593,396 litres, as against 651,727 the year previous. The quantity distilled for industrial purposes was 603,192 litres, as against 483,820 in 1936. The exportation of rum during the year was 84,210 litres, valued at Rs. 27,181 as compared with 39,619 litres valued at Rs. 8,776 in 1936.

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19.—Veterinary and Livestock.

At the beginning of 1937 the total horned cattle on estates numbered 13,646 as against 14,195 at the beginning of 1936. Cattle importation from Madagascar amounted to 5,967 heads, valued at Rs. 335,758 all of which for food purposes.

An agreement between Government and the Stock Breeders Association has been arrived at, following the recommendations of Professor Lindsay Robb, of Pretoria University, and steps are being taken for the importation of beef type bulls and heifers, with the idea of increasing the local meat production. At the same time, consideration is being given to the question of pastures in the Colony.

20.—Co-operative Credit Societies.

The principles and progress foreshadowed in the report of the previous year have been developed with encouraging results. Two new Societies were registered, but in order to secure really satisfactory working, close supervision will continue to be necessary.

The amount that Societies disbursed as loans to their members was higher than in the previous year. Of the total of such loans issued and recovered during the period under review, only 2.8% has fallen in arrear. Functioning on the principles now in force, the movement forms a most efficient system of financing small planters.

21.—Rodrigues.

The active agricultural policy advocated last year was initiated. Some considerable progress has been made in connection with tree planting in the Cattle Walk and with anti-erosion measures.

22.—General.

I wish to record my deep appreciation of the measure of assistance which I have unhesitatingly been accorded by the staff of the Department during the year.

C. A. O'CONNOR,

Acting Director of Agriculture.

Réduit,

May 4th, 1938.

DEPARTMENT OF AGRICULTURE

PART II.

REPORT ON THE SUGARCANE RESEARCH STATION AND DIVISIONAL REPORTS OF THE DEPARTMENT OF AGRICULTURE,

SUGARCANE RESEARCH STATION.

General.

A full description of the research work performed during the year is, as usual, published in the form of a separate report. Short extracts from this report are given here.

The staff of the Station has been below strength for the whole of the year. Mr. A. G. G. Hill, Senior Geneticist, in charge of the Station, left the Colony on leave of absence, on February 6th, 1937, prior to promotion to the post of Director of the Amani Institute. Mr. N. Craig, Senior Chemist, returned from leave of absence on February 17th, 1937, when he took charge of the Station. During the interval between these two dates, Dr. H. Evans, Botanist, was in charge. Mr. G. Mazery returned to the Colony on March 10th and was immediately posted to Pamplémousses Experimental Station, where he took over from Mr. P. Tennant, a temporary scientific assistant who had been in charge since the beginning of the year.

The Research Advisory Committee held five meetings in all during the year, and as a result of one of the decisions taken, the constitution of the Committee has been somewhat altered in that the Board of the Mauritius Agricultural College and the Committee of the Sugar Industry Reserve Fund, who have contributed Rs. 18,000 and Rs. 10,000, respectively, towards the cost of the Station, nominate two members each whilst Government also nominates two members, making a total of four ex-officio members and six nominated members.

A temporary field assistant, Mr. P. Tennant, has been employed by means of funds placed at our disposal by the Committee of the Sugar Industry Reserve Fund, his special duty being the carrying out of field experiments on estates.

The Senior Chemist was called to give evidence before the Commission appointed to enquire into the labour troubles, upon the question of soils and sugarcane varieties in the neighbourhood of Lallmatie.

GENETICIST'S DIVISION.

CANE BREEDING.

For the eighth season in succession, the crossing work carried out at the Central Experimental Station, Réduit, and at the Pamplémousses Experimental Station has been highly successful, a total of 81,350 seedlings have been produced from 326 crosses, and of these about 22,000 have been planted

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out in the fields. The methods employed have been similar to those used in the past, and the combinations effected were chosen, as far as available breeding material permitted, from an analysis of previous results. Seven crosses were also carried out for the Sugar Experiment Station at Mount Edgecombe, Union of South Africa, and four for the Director of Plant Breeding of New South Wales, Australia. In addition to the combinations of known merit a number of trial marriages were effected with new parents, particularly with the new released clone M.134/32 and also with a clone M.188/33, which is a seedling of POJ.2878 (♀) x BH.10(12) (♂). This seedling has several desirable qualities, but unfortunately it arrows much too profusely to become a commercial variety.

FIRST-YEAR TRIALS, 1936 SERIES.

The growth of the 1936 seedlings planted out in December 1936 was somewhat backward and consequently no selections were made in 1937, the intention being to select them in January-February, 1938.

SECOND-YEAR TRIALS.

Seven trials containing 68 clones of the 1934 series were reaped during the year, and from these trials ten selections, or 15%, were retained for further trial. Twenty-nine second trials containing 233 clones from the propagation plots of 1st selections were laid down, and will be ready for harvesting during the crop season of 1938.

THIRD-YEAR TRIALS.

In all twelve 3rd-year trials were harvested, seven being in first ratoons and the remainder in virgin crops. In all these contained fifty clones, from which eleven were selected for further trial.

Only one new cane variety was released for general distribution throughout the year, namely M.134/32, a fourth mobilised glagah clone of a good type, high yielding capacity in the field, with a good sucrose content, approximately equal to that of BH.10(12) in the trials where they have been tested against one another. It is particularly gratifying to record that the three clones M.171/30, M.72/31 and M.134/32 are highly appreciated by the planting community, and many estates are propagating these varieties as quickly as possible. M.73/31 has not proved so popular, but is being propagated more slowly, possibly on account of its seemingly apparent susceptibility to borer attack. M.108/30 has given disappointing results in this year's trials, particularly because of the quality of its juice.

In all twenty seven 4th or field trials were reaped, seventeen of these being co-operative experiments on estates. Some of these trials are of great interest, in that for the first time the clones released for general distribution by the Sugarcane Research Station have been tested in widely different conditions. Full details of these trials are given in the Eighth Annual Report of the Sugarcane Research Station, together with tables showing the performance of the four clones M.171/30, M.72/31, M.73/31 and M.134/32 in all their trials up to date, but the main conclusions are as follows:

M.171/30 has been tested against B.H.10(12) in eight trials, and the comparative figures are:

		Yield in tons of cane per arpent		Yield of sugar per arpent
M.171/30	...	47.2	...	6.40
BH.10(12)	...	35.4	...	5.00

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M.72/31 has been tested against BH.10(2) in five trials and the comparative figures are:

		Yield in tons of cane per arpent		Yield of sugar per arpent
M.72/31	...	45.4	...	7.03
BH.10(12)	...	37.1	...	5.72

M.73/31 has been tested against B.H.10(12) in eight trials and the comparative figures are:

		Yield in tons of cane per arpent		Yield of sugar per arpent
M.73/31	...	43.0	...	5.71
BH.10(12)	...	34.8	...	5.24

M.134/32 has been tested against B.H.10(12) in three trials and the comparative figures are:

		Yield in tons of cane per arpent		Yield of sugar per arpent
M.134/32	...	61.3	...	9.58
BH.10(12)	...	45.2	...	7.03

Nine field trials have been started during the year, four on estates and five at the Experimental Stations, and arrangements have been made for further trials to be started on estates at the proper planting season. Four small plots have been started on small planters' lands, three in conjunction with Co-operative Credit Societies, to try to find a cane variety to replace the inferior canes, notably the Uba de Rich Fund varieties already growing there. The varieties under test are M.27/16, M.13/18, M.108/30 and POJ.2727, with a few stools of other varieties for observation.

A large number of cuttings were supplied throughout the crop season to the Agricultural Division, the only varieties released for general distribution of which there was sufficient to meet the demand being M.108/30 and M.73/31.

N. CRAIG,

*Officer in charge,
Sugarcane Research Station.*

BOTANICAL DIVISION.

Following the development of a method for determining the absorbing surface of sugarcane root-systems, new investigations have been completed, in which qualitative data on root-distribution together with quantitative data on root length, root-hair density and total absorbing surface were obtained. The influence of soil-type on root development has been intensively investigated and results of considerable importance have emerged. These may be briefly stated as follows:

1. Root distribution was markedly affected by the environmental conditions—soil moisture having a preponderating effect. Excess soil moisture at times caused roots to develop up to the soil surface, and high soil moisture in general caused superficial root growth. Under dry conditions, on the other hand, roots penetrated vertically to considerable depths. In one environment where there was an impervious clay layer at 2–2½ feet, the root system was confined to the region above this layer, no appreciable penetration having occurred. The rate of root growth was markedly affected by temperature, moisture and nutrient status of the soil.

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2. In spite of considerable differences in root-characters between different environments, varietal features could still be recognised, particularly in the relative development of the superficial system and the buttress system.

3. There were considerable differences in the rate of development of the root-system in the different varieties, and in the length of time which elapsed before the roots became moribund.

4. Fibrous root production was markedly affected by the moisture conditions of the environment, fibrous roots being much more numerous under dry conditions.

Fibrous root production followed the well known S-curve of plant growth. There were also varietal differences in the fibrous root production. POJ.2878 forming more such roots than BH.10(12) and White Tanna. There were indications that some varieties formed their fibrous roots earlier (e.g. BH.10(12) than others (e.g. POJ.2878). The latter types had more fibrous roots in the mature system than the former.

5. Root hair density was markedly affected by variety, age and environmental conditions. The density of root hairs was higher in POJ.2878 than in BH.10(12) and White Tanna. Root hair density increased to a maximum at 6 months of age, and then fell continuously. During the drier part of the season the density of root hairs was almost twice as great in the dry environments as in the wet localities.

Following a prolonged wet season, and the attainment of maturity by the plants, this difference in root hair density largely disappeared.

6. The absorbing surface increased to a maximum at 10 months in the hotter environments, thereafter falling rapidly. The rate of fall of the absorbing surface was affected by the environmental conditions and by the variety. Temperature appeared to have a preponderating effect on the rate of fall of the absorbing surface during this period soil moisture having a smaller effect. In the colder environments there was only a slight fall, and in some cases a slight increase in the absorbing surface between 10 and 15 months.

The fall in the absorbing surface was generally much greater in White Tanna and to a smaller degree in BH.10(12), than in POJ.2878. Under cold wet conditions, however, the root system of BH.10(12) showed the most rapid fall.

It is considered that the factors leading to a loss of absorbing surface may be of considerable importance in determining the ratooning abilities of different varieties under different environmental conditions.

7. The $\frac{\text{Transpiring Surface}}{\text{Absorbing Surface}}$ ratio showed rather large fluctuations, but on the whole indicated a better position from the point of view of water economy in BH.10(12) in young canes, but in POJ.2878 as mature canes.

A similar investigation on the development of the ratoon absorbing surface in the varieties POJ.2878, POJ.2727, BH.10(12), M.196/31, M.106/30, Selangor seedling and SC.12/4 was carried out in one environment. The results of this investigation may be briefly summarised as follows:

1. The two varieties M.196/31 and M.106/30 (parentage POJ.2878 x Uba Marot) had the highest root mass, SC.12/4 and BH.10(12) followed, and the Java varieties POJ.2878, POJ.2727, and Selangor seedling had a much smaller root mass.

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2. Root hair density was markedly affected by age and variety. There was a continuous drop in the root hair density from 3 months onwards: the varietal effect was similar throughout the season. Selangor seedling had the highest density of root hairs, SC.12/4 being a close second, the other varieties falling in the following order: POJ.2878, M.106/30, BH.10(12), M.196/31, POJ.2727. The order in which the varieties fell as regards root hair density, being more or less constant through the season indicated that this feature is a varietal feature not associated to any marked degree with differences in the periodicity of growth.

3. Root hair surface differed widely in the different varieties being highest in SC.12/4 and Selangor seedling, and lowest in POJ.2727. There was a marked fall in the absorbing surface between 9 months and 12 months in all the varieties except POJ.2878 (where there was no fall) and SC.12/4 where the fall was very slight. This confirms the tremendous drop that occurs in the absorbing surface of root systems as they attain maturity.

4. The $\frac{\text{Transpiring Surface}}{\text{Absorbing Surface}}$ ratio was markedly varietal being very low in SC.12/4 and Selangor seedling, moderately low in BH.10(12) POJ.2878 and M.106/30, and high in M.196/31 and POJ.2727.

This would indicate a high capacity for drought resistance in SC.12/4 and Selangor Seedling.

5. There was good correlation between the root mass formed by these varieties in virgins and in first ratoons, but no correlation between any root characters and yield of cane.

Further experiments on the methods of application of fertiliser to plant canes indicated a superiority of the method advocated as a result of previous root studies over the methods usually used. The increase in yield obtained in such a trial at Rose Belle was $1\frac{1}{2}$ tons per acre. Similar experiments on these lines are being continued.

A statistical investigation of uniformity trial results has been carried out for the determination of the error of certain sizes and shapes of plots used in field trials with Sugarcane. The standard error of certain plot sizes expressed as a percentage of the mean plot yields are presented in the following table:

No. of			No. of holes long :								
rows wide			20		40		60		80		100
1	...	...	15.34	...	10.31	...	7.30	...	7.28	...	8.04
2	...	...	10.71	...	6.54	...	5.03	...	4.02	...	4.19
3	...	...	9.47	...	6.08	...	5.28	...	4.48	...	4.43
4	...	...	8.86	...	6.86	...	5.03	...	4.87	...	5.17
5	...	...	8.33	...	6.16	...	5.05	...	3.82	...	4.68
6	...	...	7.73	...	6.95	...	5.62	...	5.52	...	5.54
7	...	...	8.11	...	6.12	...	4.96	...	4.58	...	4.89
8	...	...	8.58	...	6.72	...	5.82	...	5.26	...	5.13
9	...	...	7.22	...	6.12	...	5.55	...	4.61	...	4.25
10	...	...	7.04	...	6.74	...	6.30	...	5.65	...	5.21

The results show that the standard error drops very quickly when the length of plot is increased up to 60 holes, the further drop on increasing the length to 80 holes being small, and there being in general a slight increase in the error when the length of plot is further increased to 100 holes. With

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short plots (20 holes) the error decreases with increasing width of plot to a minimum at 6 rows wide (when the fitted curve is plotted), there being no decrease in error when the width is further increased. With long plots, however, (60-100 holes), there is no further gain in accuracy as the plot width is increased beyond 2 rows. Long narrow plots are thus the most accurate for field experiments, the minimum error (4% approx.) being obtained with plots 80 holes long by two to five rows wide (area $1/22$ to $1/11$ acre). Four replications of such plots would have a mean error of only 2%, and thus would be expected to demonstrate differences of as little as 5%.

A trial on the resistance of the most important commercial varieties to *Phytophthora* has been initiated at Côte d'Or Sugar Estate. It is hoped from the results of this trial to determine what root or other characters constitute resistance to *Phytophthora*.

A fuller account of the work of the Botanical Division may be obtained from the Sugarcane Research Station annual report, and from Bulletins of the Sugarcane Research Station. Papers were published during the year in the *Revue Agricole*, the *Empire Journal of Experimental Agriculture*, and to appear in the *Annals of Botany* (early 1938).

H. EVANS,
Botanist.

SENIOR CHEMIST'S DIVISION.

The only officer constantly engaged in this division was the Scientific Assistant, Mr. P. Halais, but satisfactory progress has been made in various lines of research.

NEW ANALYTICAL METHODS.

New methods have been tested with a view to finding simpler methods for use in sugar estate laboratories capable of giving results which show a good correlation with those obtained by the methods already in use at the Station. The methods investigated were Kuhn's Barium Sulphate method for the colorimetric determination of the reaction of soil, the rapid chemical method described by Hance for readily available phosphates, and the Truog-Volk method of extracting exchangeable potash by means of successive extractions rather than continuous leaching.

The Kuhn's Barium Sulphate method for pH determinations was found very satisfactory, in that it gave results very similar to those obtained by the collodion bag method with normal cultivated soils, whilst for soils with which a certain amount of difficulty had been experienced with the latter method, the former was very satisfactory, the values found agreeing closely with those by the glass electrode method. Moreover, a further disadvantage previously noted with the collodion bag method, was that some samples of collodion affected the pH value considerably. In future work therefore it is proposed to employ this method.

The rapid chemical method of Hawaii for determining the amount of available P_2O_5 was found to give results in good agreement with those obtained by means of Truog's Method, except in the case of the rocky soils of the high rainfall districts, which invariably contain relatively high contents of organic matter. In the case of these soils the results obtained by this method agree much better with those obtained by Dyer's 1% citric acid method. The figures obtained from the R.C.M., like other methods depending

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upon an acid extraction, emphasise the poverty of the more acid soils, especially those whose pH value lies below 6.0. In all cases, soils with a low content of P_2O_5 and a pH value less than 6.0 contain a very small amount of readily available P_2O_5 , and even when the total P_2O_5 is fairly high the amount of P_2O_5 found by the rapid chemical method in the acid soils is medium or low. A positive correlation ($+0.66 \pm 0.05$) is found between the total phosphate content and the available phosphate determined by this rapid chemical method when the reaction of the soils is above pH 6.0, but below this figure no such correlation can be noted.

The Volk-Truog method of determining the amount of exchangeable potash by means of two extractions, each for a period of five minutes instead of continuous leaching was tried, and it was found that 98% of the exchangeable potash was extracted by this method, which is much more convenient and rapid than the former leaching method employed, and it has the further advantage that it does not require a constant water supply for operating a vacuum pump for leaching.

SOIL PROFILES.

The Botanist of this Station in the course of root-studies on four estates St. André, Pierrefonds, Hermitage and Réunion—took soil samples from varying depths from each locality, and these samples were analysed for nutrient contents and reaction. The results of these analyses, which were submitted to the Botanist, were fairly typical of the localities from which they were obtained, with the exception of the St André soil profile, which was chosen in a badly drained area, to show the effect of a high water table upon root production, and consequently is was a soil with a greyish colour, as has already been noted in soils with impeded drainage.

A rough examination was made of a pit dug on the lower slopes of Signal Mountain by the Forestry Department; this pit showed all the characteristics of the Plaine Lauzun profile which has been described in detail in earlier reports.

SOILS AT LALLMATIE AND BON ACCUEIL.

When the writer was called upon to recommend varieties of sugar cane to replace the present varieties, chiefly Uba de Rich Fund canes, a preliminary survey of the area was roughly made, and it was immediately obvious that the soils in the neighbourhood of Lallmatie and Bon Accueil were different in nature from any which had previously been examined by the Sugarcane Research Station. These soils were extremely shallow, in many places not more than a few inches deep and often the parent rock appeared above the surface as outcrops. The thin surface soil which has quite a good texture, was underlain by a very thin, red subsoil, often not more than one or two inches in thickness, which was succeeded by the parent material, a porous type of basalt. It would appear that these soils are derived from a comparatively recent lava flow. In all probability this area is the start of the Plaine des Roches, where a thin superficial young soil and a thin basaltic lava flow overlies a mature red soil.

The outstanding feature of these soils from a chemical point of view is their high organic matter content, two samples containing 16% and 20% oven dry soil respectively. The soil organic matter is normal, in so far as its carbon nitrogen ratio is concerned, and consequently high quantities of organic nitrogen are present, the figures being 0.85% and 1.04%. The potash con-

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tent of these soils is low, and the phosphate content doubtful. Obviously one great disadvantage in these soils is their shallow nature, which will render the crop liable to drought, but it is probably that the high content of organic matter will help in this connection, by increasing their water holding capacity. Obviously these soils because of their small depth and high humus nature present different problems from the soils previously described. So far demonstration plots have been started to show the effect of phosphatic guano ; these plots are being conducted in conjunction with the variety plots.

Further small planters' soils have been examined, and at St Julien d'Hotman, the soils are of similar nature to those at Rich Fund Sugar Estate, but more rocky, and more highly leached. At Solférino, the soil is very shallow and as at Lallmatie is underlain by a porous basaltic rock. However, in this soil there has been no big accumulation of organic matter of which it contains 6.7%, the nitrogen content being 0.35%. This soil is very low in available potash, and its phosphate status is doubtful.

FOLIAR DIAGNOSIS.

This work, which was started in 1936, was continued during the course of the year under review. Samples were taken from trials when definite response to one or more of the fertilising elements has been noted, by selecting at random the third leaf from the top of the shoot, about thirty leaves being taken from each plot, all the leaves from similarly treated plots being mixed. It is proposed to take further samples at regular intervals from these trials to see how the plant food constituents in the leaf vary throughout the growing period. One or two comparisons between different varieties are already available, but some variety trials will also be sampled in order that the effect of variety can be the better known.

Although it is not proposed to discuss the results obtained in detail at the present juncture, it may be stated that this method seems to have considerable promise, in that the status of the soil with respect to the different elements seems to be reflected by the analytical results obtained from the leaves. Thus in trial Bio.8, at Bel Ombre Sugar Estate, reported in the Seventh Annual Report of the Sugarcane Research Station, there is little difference in the leaves from the differently treated plots, and the yields from them were approximately the same. In trial Bio.5, however, the figures in the above mentioned report show that the leaves from the no-phosphate plot are definitely poorer in P_2O_5 than those from the complete fertiliser plot, whilst the leaves from the no-potash plot contain less K_2O than those from the complete plot. On harvesting, the yields from the various plots were:

Complete fertiliser	...	51.0 tons per arpent
No-phosphate	...	42.7 ,,
No-potash		44.7 ,,

In trial Bio. 9, at Cascade, Rose Belle Sugar Estate, a practically total crop failure is probable in these plots which received no potash fertilisers. The total sum of fertiliser elements ($\%N + \%P_2O_5 + \%K_2O$) in the leaves from the experiment is on the low side, but the proportion of K_2O to $(N + P_2O_5)$ is approximately one-half of what it is in cases where good growth has been maintained. Again, in this trial, two varieties—White Tanna and BH.10(12)—are being grown side by side in identical conditions. The P_2O_5 content of both sets of leaves is about the same, but the nitrogen is lower and the potash higher in the White Tanna than in the BH.10(12).

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From present appearances, the optimum ratio would appear to lie in the neighbourhood of:

$$N = 50 \text{ P}_2\text{O}_5 = 12 \text{ and K}_2\text{O} = 38,$$

the sum $\%N + \%P_2O_5 + \%K_2O$ being taken as 100. In some cases this total amounts to slightly more than 3% of the dry matter in the leaf, but in trial Bio. 9, the sum amounts to about 2.5%.

BOX EXPERIMENTS TO TEST VARIOUS METHODS OF APPLICATION OF PHOSPHATIC FERTILISERS.

Two of these experiments were started, but unfortunately the plants could not be weighed, as they were severely attacked by borers before they were ready to be reaped, and many died as a result.

In the early stages, however, identical results were obtained from both experiments, namely that the striking response was only obtained when the phosphate was spread in a layer at a depth of about 3 inches. Pocket applications at depth of 3 inches caused some improvement, but mixing with the total soil and a surface application caused little improvement over those boxes which received no phosphatic fertilisers.

WORK BY SUGAR CHEMISTS FROM SUGAR ESTATES.

Mr. G. Ducray continued his work respecting the properties of the soils of Queen Victoria Sugar Estate and of Constance Sugar Estate. Mr. O. d'Hotman carried out a series of analyses of basalt from Highlands Sugar Estate, and as a result of this work, he has started large scale experiments on the soils of this estate to determine the effect of application of powdered basalt at varying doses.

MANURAL TRIALS.

In all, nine manurial trials have been reaped during the year, three at the Central Experiment Station, Réduit, and six on estates.

At Réduit, the most interesting trial was that in which the growth of canes in sub-soils was studied. The yields of the sub-soil plots which received ordinary treatment but with no phosphatic fertilisers was only about 50% of the soil plots with complete fertiliser. A heavy dressing of phosphatic guano gave a significant increase, and where both phosphatic guano and pen manure were added the yield approximated to that given by soil plus complete fertilisers. The effect of mixing 20% sub-soil with the surface soil caused a fairly marked, but not significant, decrease in yield. The results confirm in toto those obtained with maize plants grown in boxes, and it seems that the chief cause why sub-soils are so infertile in Mauritius is that they are highly deficient in available P_2O_5 , and that when this acute deficiency is remedied then they may be made productive. This may be particularly important in poor thin soils where the sub-soil is near the surface.

The heavily fertilised plots in trial 69 again gave a big increase over the lightly fertilised plot, a difference of about 12 tons per arpent in favour of the heavily fertilised plots being noted. In all, in three crops the heavily fertilised plots have given nearly 44 tons per arpent of sugar cane more than the plots receiving small dressings. This trial is being conducted for a further year after which it will be uprooted and replanted with one of the newer varieties, the same manurial programme being maintained.

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Trial Bio. 6, which is situated alongside trial 69, showed significant responses to both phosphatic and potassic fertilisers, the increases being 8.8 and 6.3 tons per arpent respectively. The complete fertiliser plots gave a yield of 51.0 tons per arpent, the variety grown being BH.10(12).

In trial Bio. 8, at Bel Ombre Sugar Estate, which was designed to test the best form of phosphatic fertiliser, no significant response was obtained to any form, and consequently no information is available as to the best form to use.

Two trials were reaped at Queen Victoria Sugar Estate during the year. Trial 91 was in first ratoons, to test the effect of complete concentrated fertilisers with the equivalent quantities of straight fertilisers, equal quantities of plant food being applied to both series of plots. No significant difference was noted. The field in which trial Bio. 7, which was to test pen manure versus all artificial fertilisers and C.C.F. versus straight fertilisers, was situated proved very irregular, with the result that the standard error was very high, so that none of the differences found were significant. Trial 92 situated at St. André Sugar Estate, which was similar in design to trial Bio. 7, was continued in first ratoons, but no significant differences were noted.

In trial 70, at Bel Air-St. Félix Sugar Estate, continued in 2nd ratoons, the effect of omitting Nitrogen, Phosphorus and Potash from a complete fertiliser was tested, and the only significant decrease caused by these omissions is in the case of when Nitrogen was not supplied. A small decrease was noted in the no-phosphate plots.

The results obtained from trial 71, situated at Bénarès Sugar Estate in the 2nd ratoon crop were similar to those obtained in the previous year with the first ratoon crop, but the actual differences were slightly lower, and the standard error slightly higher, so that the differences were not significant. However, it seems fairly certain that nitrogenous fertilisers have given a slightly increased yield, whereas the effect of phosphates and potash has been negligible.

In trial 72, reaped in 2nd ratoons, the plots which received no fertilisers were significantly lower than the complete fertiliser plots, but no single element gave a significant increase. From inspection of the results, it would appear that the nitrogen and phosphate fertilisers are mainly responsible for the significant difference between no-fertilisers and complete fertilisers.

N. CRAIG,
Senior Chemist.

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AGRICULTURAL DIVISION.

1.—Central Experimental Station, Réduit.

SUGAR CANE.

As in the past the more important and newer varieties of canes were propagated for distribution among planters. Of the varieties grown for this purpose at the Station the principal were M.108/30, M.171/30, M.72/31, M.73/31 and M.134/32. During the year 96,479 cuttings were sold to 121 planters for Rs. 1,929.58. In addition the Sugarcane Research Station was supplied with many cuttings, while 3,320 others were provided free to small planters through the medium of Co-operative Credit Societies. 43.40 tons of canes not required for propagation were sold to Trianon Estate and 2.74 tons to Mon Désert Estate.

These canes were grown in fields 9, 18 and 19. Further propagation of the more outstanding cane varieties took place late in the year.

PINEAPPLES.

A small crop was obtained in the winter. In December fruits began to mature and consignments were sent to the Mauritius Pineapple Company's Factory. The pineapples were grown in fields 1, 2 and 21. In field 2, a Nitrogen experiment—containing four treatments: increasing doses of nitrogen—laid out in February, 1936, and planted with slips, fruited this year. Picking was not over at the end of the year so that final results cannot be given here. There were, however, definite indications that the plots receiving the higher doses of nitrogen matured their fruit earlier and gave heavier fruits. These plots will no doubt give most encouraging yields.

Selection work was also begun. 359 plants out of a total of about 15,000, i.e. 2.4%, were selected. The progeny from these plants will be further selected in due course.

FOOD CROPS.

Variety collections of sweet potatoes, manioc and yams were maintained during the year. Two variety trials, one with sweet potatoes and the other with manioc, were laid out and completed.

SWEET POTATOES.

The following varieties were included in the trial: Joes, Key West, Red Bermuda, Violet, Yellow and Southern Queen. Joes was the quickest maturing and heaviest yielder, producing 5.50 tons per acre after $4\frac{1}{2}$ months.

MANIOC.

Four varieties were planted in the trial with manioc, namely: Cassava beurrium, Manioc de Table, Icery and No. 29. Planting was done on 1.4.37, and the roots were dug out on 22.12.37. Cassava beurrium produced 4.23 tons per acre, the next best being Manioc de Table with 3.28 tons per acre.

POTATOES.

Three trials with potatoes were also carried out all of which suffered to some extent from "blight". The disease, however, was successfully checked by spraying with bouisol. In the first trial three different planting

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distances were compared, the closest spacing giving the heaviest yield. It is to be presumed, notwithstanding, that had not disease set in the results would have been different. The other two trials were manurial in character. In one the treatments were as follows: (a) no fertilizer, (b) complete fertilizer, (c) no nitrogen, (d) no phosphoric acid and (e) no potash. Treatment (c) gave the highest yield—2.44 tons per acre—which, however, was not significantly superior to that of treatments (b) and (d). Treatment (d) gave much the poorest yield—0.97 tons per acre—furnishing further proof of the marked need of the crop for phosphoric acid.

In the other manurial trial the following treatments were compared: (a) no manure or fertilizer, (b) farmyard manure alone, (c) complete fertilizer but no manure, (d) farmyard manure and complete fertilizer. As might have been expected treatment (d), which yielded 4.17 tons per acre, was significantly better than the other treatments. There was a small difference between treatment (b)—3.48 tons per acre—and treatment (c)—3.10 tons per acre.

Owing to the popular belief among local potato growers that fertilizers “per se” impair the keeping qualities of the tubers within a short time, samples of the potatoes were kept. After four months there were no diseased tubers in any of the samples.

GENERAL.

At the end of the year the plantations of coffee and carobs were doing well. A small crop of coffee berries was obtained, the seeds being sown at Barkly Experimental Station.

The trial plantations of *Derris elliptica*, Benth. and *Derris malaccensis* Prain. (Tuba plant) made last year grew satisfactorily. Twelve varieties of pigeon peas (*Cajanus indicus*) received from India and one of Ambérique (*Phaseolus radiatus* L.) from Java were planted. Small multiplication plots of ginger, pois Mascate and ground nuts were also laid down.

New land for experimental plots was cleared of bush, the work being still in hand at the end of the year.

PLANT EXCHANGE.

Plants and seeds were received from :

Director of Agriculture, Malta.
“ British Guiana.
“ Zanzibar.
“ Coconut Grove Palmetum, Florida, U.S.A.
“ Centro Experimental Agricola, Nicaragua.
“ Edentale Nurseries, Natal.
“ General de Agricola, Guatemala.
Superintendent Botanical Station, Pusa.
D. A. English & Co., Natal.
Institute of Plant Diseases, Java.
Messrs, Vilmorin-Andrieux & Co., Paris.

Plants were sent to :

Harvard University, Cuba.
Coconut Grove Palmetum, Florida, U.S.A.
Centro Experimental Agricola, Nicaragua.
East African Agricultural Research Station, Tanganyika.

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Royal Botanical Gardens, Kew.
Royal Palm Nurseries, Florida.
Department of Agriculture, Jamaica.

2.—Barkly Experimental Station, Beau Bassin.

A large number of economic plants was raised for sale to the public and for distribution free of charge to School gardens, Allotments, various Government Institutions and to the Agricultural Superintendent Rodrigues. The revenue for the sale of plants during the year was Rs. 1,508.40.

A small trial plantation of rice was made in December. Germination was satisfactory.

The trees in the orchard are doing well. The peaches, particularly the seedlings, and the litchi trees bore good crops, except the newly imported Chinese litchis which did not bear at all this year. Mangoes fruited sparsely, the Indian varieties recently introduced hardly setting fruit at all.

The Pemba dwarf coconuts are doing well. 201 more nuts were received from Zanzibar for propagation.

Papaw seeds imported from the Panama Canal zone were sown and germinated satisfactorily.

Many seedlings were raised, and cuttings, grafts and layers made, of various plants including sapodilla, figs, bread fruit, litchis, peaches, apples mangoes, avocado pears, annonas, loquats, pecan and cashew nuts, citrus, etc.

The rainfall during the year was 1397.7 mm. against 1049.8 mm. in 1936.

3.—Royal Botanical Gardens, Pamplemousses.

ECONOMICS SECTION.

Promising sugar cane varieties were propagated for distribution among planters. Many cuttings were sold, together with 24,990 tons of canes not required for propagation.

A small crop of pineapples was consigned to the Mauritius Pineapple Company.

As usual collections of varieties of food crops were grown on part of the economics section, cuttings, seeds and tubers being supplied free to school gardens and Allottees at Bois Marchand and Richelieu.

The vanilla and pepper plantations made in 1935 are now well established and have borne a small crop. The plantations of coffee, areca nuts, Pemba coconuts and chaulmoogra made satisfactory progress during the year.

460 mango grafts and 500 litchi layers were made and sent to Abercrombie Nursery and Barkly Experimental Station for sale to the public.

The litchi crop was more than disappointing. It was sold by auction for only Rs. 40 as compared with Rs. 240 in 1936. The litchi crop this year was a poor one throughout the island.

ORNAMENTAL SECTION.

This section was kept in good condition throughout the year. The Gardens continued to attract the attention of the increased number of tourists who visit Mauritius. At the end of Avenue Poivre a bronze bust of Bernardin de St. Pierre, erected by the Comité Bernardin de St. Pierre, was unveiled by His Excellency the Governor on the 14th November, 1937.

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4.—Abercrombie Nursery.

As in previous years a number of plants, economic and ornamental, was raised at this nursery for sale to the public. The revenue from this source amounted to Rs. 549.65 as compared with Rs. 1,052.55 for 1936 and 812.35 for 1935.

5.—Government House Grounds.

The grounds at Le Réduit and Port Louis were maintained in good condition. The appearance of the Government House Grounds at Port Louis is now much improved.

6.—Food Settlements: St. Martin, La Ferme and St. Thomas.

These settlements cover approximately 84 acres of Crown lands leased to 70 persons who are all members of the St. Martin Co-operative Credit Society. Satisfactory crops of maize, manioc and sweet potatoes were raised, while on some plots within easy reach of the La Ferme irrigation canal useful crops of vegetables and potatoes were also grown. The settlements were visited regularly by the Assistant Agricultural Officer and close control maintained.

7.—Fresh Fruit Export : Litchis.

On 13th December, 1937, 950 cases of litchis were exported to London and 250 cases to Cape Town. The fruit was shipped by Messrs. Pearmain & Co. and Mr. E. Sauzier. The cases contained about 8lb. net each ; the fruit was packed as soon as possible after picking and shipped without any pre-cooling ashore. Moreover, loading on the ship was done in the early morning. It was hoped that with these precautions the condition of the fruit on arrival in England would be satisfactory and that there would be but little wastage. News has been received that the consignment reached London in very good condition with practically no wastage and that the price obtained was satisfactory.

8.—School Gardens.

Most of the thirty-three registered school gardens showed good progress this year. These gardens were visited regularly by the three Agricultural Instructors and the Assistant Agricultural Officer, 571 visits being paid during the year. At each visit gardening classes were held and short elementary lectures delivered. The garden note-book scheme was further developed.

Prizes for the best gardens were awarded as follows:

1st Prize of Rs. 40 to	Plaines des Papayes Government School.
2nd ,, 30 ,,	Mahebourg Government School.
3rd ,, 25 ,,	Old Grand Port R.C. Aided School.
4th ,, 20 ,,	Bois Chéri Government School.

Two prizes of Rs. 12.50 each and one of Rs. 10 were awarded to Chemin Grenier, Bambous and l'Escalier Government Schools respectively. Two other prizes of Rs. 5 each were also awarded.

9.—Extension Work and Visits to Estates and Planters.

This side of the Division's activities was maintained during the year and satisfactory progress made. The three Agricultural Instructors, in addition to other work in connection with school gardens, plant inspection

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at the Customs, and regular inspections of ten co-operative credit societies by one of them (Mr. E. Bedsy) and the Assistant Agricultural Officer kept in close touch with small planters of 40 agricultural areas. Particular attention was paid by them to the control of insect pests and of plant diseases, while a few small planters were induced to carry out simple field trials with various crops such as potatoes and ginger. Visits were also paid to small sugarcane planters, advice being given with regard to the planting of improved cane varieties and the more rational use of fertilizers.

The Senior Agricultural Officer and the Agronomist maintained contact with sugar estates, tea planters and others, 91 visits being paid during the year. The pineapple growers, particularly those who had received loans under The Pineapple Development Scheme, were often visited and given advice.

10.—Allotments.

The total number of allottees remained at 133, the distribution at the various centres being as follows:

Barkly	...	...	49
Bois Marchand	...	...	32
Richelieu	...	...	25
Malherbe	...	...	18
Curepipe	...	...	7
Floréal	...	...	2
Total	...	...	133

Very few people had to be evicted and these, with one or two exceptions, belonged to the Richelieu Group. Vacancies were immediately filled by people on the waiting list. On the whole, however, satisfactory progress was in evidence. The Assistant Agricultural Officer paid regular visits to the allottees to advise them as to the best methods of cultivation. The Senior Agricultural Officer made numerous inspections thus exercising the closest control over the scheme. The Allotments Sub-Committee held several meetings during the year.

11.—Higher Agricultural Education.

Lectures on agricultural subjects were regularly delivered, by the Senior Agricultural Officer and latterly by the writer, to 1st, 2nd and 3rd year students at the Mauritius College of Agriculture.

12.—Pineapples.

Apart from the work already undertaken at the Central Experimental Station which has been briefly reported upon earlier in this report, three Pineapple Experimental and Demonstration Stations were created early in 1937. This work was begun as a result of the grant of £1,000 to the Colony by the Colonial Development Fund for experimental purposes with pineapples.

The three stations are situated respectively at Mon Rocher, Trianon and Britannia at 250 ft, 1050 ft. and 850 ft. respectively above sea level. The annual rainfall of these places also shows wide variations averaging about 58 inches per annum at Mon Rocher, 65 inches at Trianon and 108 inches at Britannia.

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The areas of the stations are as follows: Trianon 5 acres, Mon Rocher 3 acres, Britannia 2 acres. Altogether 14 trials have been laid down of which there are 4 spacing trials, 6 manurial trials, 2 combined spacing and manurial trials, 1 mulching trial and one trial in which the dates of planting of the various plots vary. Some of the trials have been planted with suckers, others with slips and others with crowns. A certain area is cropped non-experimentally.

Three of these trials showed fruit at the end of the year, but it is only late in 1938 that all the plantations will bear.

13.—Field Trials on Estates.

SUGARCANE.

Two manurial trials with canes were harvested in first ratoons, while one manurial trial with green manure (*Mucuna utilis*) and sugar cane was laid down.

The first two trials aimed at determining the effect of applying farmyard manure (*a*) in two doses—about $\frac{1}{4}$ th. at planting and the rest a few months later—and (*b*) all the manure applied at planting only. Treatment (*a*) was consistent with widespread local practice. There was no difference in the results of the two treatments either in virgins (reaped in 1936) or in 1st ratoons (reaped in 1937). The trials were conducted at Deux Bras and Mon Trésor Estates. At Mon Trésor, the trial also included plots treated with a small quantity of manure at planting and generous doses of artificial fertilizers. The yields obtained from these plots were the best of the whole trial. The results of these trials were published in the *Revue Agricole*.

The manurial trial with sugarcane and green manure was laid down at Union (Ducray) Estate in April, 1937. In certain plots some of the fertilizers were applied to the green manure and the difference to canes while in other plots all the fertilizers were given to canes direct. The trial will be harvested in 1938.

TEA.

A small and simple manurial trial was started at the Corson Tea Estate, Curepipe, on old tea, the fertilizers being applied in August and November. The main feature of the trial was the varying amounts of nitrogen applied to the various plots.

14.—General.

TOBACCO.

During the absence on leave of the Government Tobacco Officer, from 21st January to 3rd November, this Division took over the work at the Government Tobacco Experimental Station, La Ferme, the Agronomist being in charge.

RODRIGUEZ.

The writer visited Rodriguez in November and submitted a report to Government on agricultural conditions in the Dependency.

15.—Conclusion.

In conclusion, I would like to record my appreciation of the loyal support I have at all times received from the officers of the Agricultural Division.

A. NORTH COOMBES,

Acting Senior Agricultural Officer.

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CO-OPERATIVE CREDIT DIVISION.

1.—Administration.

(a).—Honourable G. E. Bodkin, the Registrar, proceeded to Europe on leave of absence on the 24th October, and I was appointed to act as Registrar, in addition to my duties of Assistant Registrar.

(b).—The strength of the Inspectorate consisted as in the previous year of myself, one whole-time Inspector and one part-time Inspector (Mr. E. Bedsy) with combined duties of Agricultural Inspector.

(c).—The staff again experienced an arduous twelve months' work as a result of: (i) Continuing the policy adopted and referred to in the previous year's report; (ii) examining the question of removing from existing societies the non-agricultural members; (iii) assisting committees in the question of allowing members to obtain shares by deduction from loans granted to them, with a view to making them hold shares in proportion to their holdings; (iv) attending to applications for registration of new societies; (v) dealing with the ever increasing paper aspect of the movement.

To relieve the whole-time inspecting officers, particularly the Assistant Registrar, from a great deal of routine work which now occupies an immense amount of his time and energy which could better be expended on work connected with an expansion of the movement, the scheme referred to in the previous year's report has been put forward and it is gratifying to note that Government has approved of the appointment of a Clerical Assistant for the Division as from the 1st July next.

2.—Capital.

The total working capital of the Societies which last year stood at Rs. 263,086, was this year Rs. 273,079; this increase is due to advances from State Funds made to some Societies and to additional shares contributed by the members.

Following the advices given to the members last year, to the effect that "they should make arrangements for the provision of an accumulation of owned capital with which, in the event of consecutive harvest failures or other calamities they would be able to finance their requirements thereby rendering them independent of borrowed capital after such occurrences"; it is a pleasure to be able to record that the members contributed additional shares to the value of Rs. 8,850. Further they are quite willing to continue increasing their shareholdings gradually in normal seasons.

3.—Government Advances.

Advances totalling Rs. 15,800 from State Funds were made to four Societies; repayments amounting to Rs. 810 were effected to the Treasury as instalments due by five Societies. The amount still due to Government by Societies on 31st December was Rs. 17,000, and is held by the following:

	Rs.
New Western Triolet	600
Surinam-Souillac	1,050
Crève Cœur	1,350
Lallmatie	2,700
Saint Julien d'Hotman	10,000
Rivière du Rempart	1,300
Total	Rs. 17,000

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4.—Reserve Fund.

The total Reserve Fund of the Societies is now 3.05 times the value of the shares originally contributed by the members.

5.—Societies, Dividend and Interest.

The number of Societies in operation in the Island on the 31st December was 34. One society was dissolved and two new societies were registered during the year, after educating the members thereof in the main essential points of co-operation. Applications for the formation of new societies have been received from some other villages ; their registration will be attended to in due course.

None of these Societies declared a dividend. Nine Societies reduced the rate of interest on loans to their members ; so that now there are:

Seven Societies working at	5% interest.
Nine " "	6% "
Seven " "	7% "
One Society "	8% "
Four Societies "	9% "
Four " "	10% "
Two " "	12% "

6.—Dissolved Societies.

The number of dissolved Societies which last year stood at ten, is now nine. One Society was dissolved during the year, and liquidation proceedings have been closed in the case of two of the dissolved Societies.

The members of one of the two Societies in which liquidation proceedings were closed, have been reimbursed the value of the shares originally contributed by them. The indivisible reserve fund of that Society has, in terms of Article 21 of the Consolidated Rules made under Article 31 of the Co-operative Credit Societies Ordinance No. 4 of 1913, and published under Government Notice No. 173 of the 28th August 1915, been distributed between two Societies started in the same locality.

In the case of the other Society the total of the debts held by the members had to be written off. In consequence the members did not receive a cent on the value of the shares contributed by them.

Activity is being directed towards the winding up of the affairs of the remaining dissolved Societies.

7.—Loans to Members and Recoveries.

The amount the Societies disbursed as loans to their members was higher than in the previous year. The total amount loaned out has, as in the previous year, been effected by the Committees of the Societies and invariably in the presence of the inspecting officers. The principles adopted in connection with the issue of loans to members and referred to in last year's report were strictly observed.

The increase witnessed in the amount disbursed as loans to the members may be attributed (a) partly to the formation of new Societies whose members have availed of loans: (b) partly to members of the existing Societies who, in the past, took loans from outside sources, but have now realised

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the actual advantages derivable from dealing with their Societies. Thirty three Societies have continued to devote their attention chiefly to granting of loans for cane cultivation. In a few cases, however, loans for the cultivation of tobacco, vegetables and other food crops were also granted. One Society devoted its attention chiefly to the cultivation of vegetables and food crops on Crown lands.

The amount of loans recovered during the year showed a marked improvement. The improved condition witnessed was not due to increased pressure upon debtors, for the previous year's policy was continued of extending every consideration to debtors who were making honest attempts to repay ; legal action was taken only in cases where failure to pay was deliberate and contumacious, and such default was having a bad effect on payments by other members. Despite the very low price of sugar prevalent during the year, the maintenance of repayments is clearly a striking evidence of the continuance of the revival of co-operative spirit and enthusiasm which showed itself during the previous year. It is also evidence of the continued hard work and sensible guidance of the inspecting officers ; for it cannot be claimed that, left to themselves, many Societies would succeed in inducing or even make the attempt to induce their members to pay their dues. Of the total loans issued and recoverable during the year 2.8% only has fallen in arrears, as compared with 2.6% last year. The total of the overdue debts which last year stood at Rs. 62,623, was this year Rs. 42,965.

8.—Inspection of Societies.

The inspection of the books of the Societies was made at regular intervals as in the preceeding years. From January to March and from September to December fortnightly inspections were made late in the afternoon and even on Sundays and Public holidays. Monthly ones were effected from April to May. On these occasions meetings of the managing committees of the Societies were held and loan applications from members were scrutinized in the presence of the inspecting officers. At the same time the cases of members having overdue debts were reviewed. Particularly, attention was directed towards the advices given in the usual letter of review and the committee members were queried in cases where such advices had been disregarded.

This procedure has proved extremely effective in that the officers of the Division have been in constant touch with the members of the Societies in general, thereby proceeding further with their education in co-operative principles.

During the month of June the accounts of all the Societies were audit-inspected by the Assistant Registrar and the whole-time Inspector. On this occasion a transcript of the current as well as of the overdue loans and other statement of accounts were prepared by the Assistant Registrar.

The practice was maintained of setting aside one day a week (Friday) for the attendance of the Registrar, the Assistant Registrar and the Inspectors at the Town Office of the Department of Agriculture so as to enable members of the Societies to consult them, also to enable the Registrar to discuss closely with the Assistant Registrar and the Inspectors the audit notes taken down by the latter during their week's tour.

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9.—General Meetings.

The Annual General Meetings of the Societies were held during the months of July and August. Two extraordinary general meetings of each of the Petit Raffray and Grand Bois Societies were also held in February and May. At these meetings the books of the Societies were closely scrutinized by the Registrar. The transcripts of overdue debts and other statement of accounts prepared by the Assistant Registrar, on the occasion of his audit-inspection in June, were also checked. At the same time the debtors present were minutely examined as to their exact financial position. Letters reviewing the affairs of each Society as well as programmes of work to be executed were prepared and sent to the Presidents for necessary action. To such letters were appended copies of the Balance Sheet, Profit and Loss Account and a Statement of Receipts and Disbursements.

10.—Rules to extend the powers of the Registrar.

During the year under review some undesirable practices have been detected. Committee members of a Society were reluctant to remove a member of the Committee whom they knew was unfit. He was kept on account of his influence, irrespective of the fact that he was utilising the co-operative movement for furthering his personal aims to the detriment of the bulk of poor illiterate members. It was also brought to light that in the same Society the general meeting could not secure the necessary two-thirds majority required by the bye-laws to expel another influential member who was known to be acting in a manner prejudicial to the interests of the Society. To obviate such malpractices steps have been taken to introduce legislation empowering the Registrar to require a Society to dismiss such members as referred to above. The necessary draft legislation has been submitted and is under consideration by Government.

For facility of reference and with a view to having the law on the Co-operative Credit Societies contained in one enactment, steps have also been taken to produce a Consolidating Ordinance for submission to the Legislative Council.

11.—Planting Material and Demonstration Plots.

The planting material plots started by the various Societies referred to in last year's report are being successfully maintained. During the year three planting material plots and three demonstration plots have been started. The number of Societies having planting material plots is now twelve. On the other hand three Societies have demonstration plots. Apart from canes of better varieties which are supplied free of charge to these Societies by the Department of Agriculture, such plots are being maintained at the Societies own expenses.

12.—Rodrigues.

There is only one Society in this Dependency. During the year under review a report on the working thereof was not available. The Agricultural Superintendent, who is the supervisor of the movement was on leave of absence in Mauritius. Arrangements are being made for a special officer to examine the position of the movement there, in the month of January 1938.

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13.—Conclusion.

As a result of the continuation of the supervision procedure adopted since 1933, coupled with (i) a general clearing up of the situation ; (ii) the inauguration of a system of advice embodying a greater degree of personal contact with the members of these Societies ; (iii) the bringing into operation of the changes made in the Co-operative Credit Societies Ordinance ; (iv) the giving effect of the recommendation made by the Assistant Registrar on his return from Ceylon after his training there, it can safely be said that the movement is now operating on a sound basis, and forms a most efficient—if not the most efficient—system of financing small planters.

As in the previous year, all the legal affairs of the Societies were entrusted to an Attorney ; it is interesting to note that this policy continues to prove valuable.

In conclusion I wish to record my appreciation of the loyal and whole-hearted manner in which the whole-time and the additional Inspectors have discharged their arduous duties under exacting circumstances.

M. BURRENCHOBAY,

Acting Registrar,

Co-operative Credit Societies.

DIVISION OF PLANT PATHOLOGY.

Mr. E. F. S. Shepherd, the Botanist and Mycologist of the Department, proceeded to Europe on leave of absence on January 21st, 1937, and the undersigned, Scientific Assistant of the Division, was appointed Acting Botanist and Mycologist as from that date. Whilst on leave, Mr. Shepherd was appointed Plant Pathologist of the Gold Coast Territory ; the duties of Head of the Division were therefore continued by the writer, no appointment to the vacant post having been made up to the time of writing.

The following work was performed during the year under review.

1.—Diseases of Sugar Cane (*Saccharum* spp.)

GUMMING (CAUSED BY *Bacterium vasculorum* (COBB) G. SMITH).

DISCOVERY OF NATURAL HOSTS OF THE ORGANISM.

A comparison of the cultural characters of the pathogen isolated previously from the palm *Dicoryosperma album* Wendl. et Drude (Annual Reports 1934–1936) with those of *Bacterium vasculorum* isolated from sugarcane revealed the fact that the two organisms were similar. Inoculations then carried on with the palm bacterium on sugarcane leaves and cuttings confirmed their identity.

The mention in the report for 1935 of the palm bacterium being non-pathogenic to cane was due to the fact that perfectly healthy shoots had been produced by cane cuttings inoculated with the bacterium. It was not then known here that cuttings even heavily infected with *B. vasculorum* often fail to show the disease in the shoots produced, as North pointed out later in Australia.

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As a result of the identification of the palm pathogen, the disease occurring on *Thysanotena maxima* Kuntze, mentioned in the report for 1935, was again investigated. A bacterium was isolated from the tissues of the plant and its pathogenicity demonstrated by inoculation into and subsequent reisolation from the host. Inoculations into sugarcane leaf blades and cuttings also revealed its identity with *B. vasculorum*. Cross inoculation work with *B. vasculorum* and the bacteria from palm and *Thysanotena* on the different hosts found and on maize further confirmed their identity.

Detailed results of the investigations carried on will appear later, but brief articles dealing with the subject have already been published in Nos. 93 and 94 of "La Revue Agricole de l'Île Maurice," and a paper has been written at the suggestion of the Director of the Imperial Mycological Institute for presentation to the VIth International Congress of Sugarcane Technologists, to be held at Baton Rouge in September 1938. Cultures of the isolations from palm and from *Thysanotena* have been forwarded to the Curator of the National Type Culture Collection at the Lister Institute, London, also at the suggestion of the Director of the Imperial Mycological Institute, who confirmed the identifications arrived at here.

In this connexion, reference must be made to the bacterial maize disease mentioned in the report for 1932. Mr. S. F. Ashby, who had stated in 1932 that the bacterium which had been isolated from maize resembled strongly a strain of *B. vasculorum* received some years previously from Australia, expresses himself thus, in a letter dated September 15th, 1937:

"The cultural characters, as far as they went, of the isolation from "naturally infected maize were those of *B. vasculorum*."

The maize organism had been forwarded by the Imperial Mycological Institute in 1932 to Washington, and there stated to be non-pathogenic to maize. Its pathogenicity had however been proved in Mauritius, but when the news of the results obtained at Washington reached the writer, his original cultures had unfortunately died out. The disease of maize has not been met with since, in the island, and no further work has therefore been possible on the disease, as it occurs in nature. In view, however, of the similarity in the symptoms exhibited by the diseased plant and the inoculated ones in 1932 and those produced by the palm and *Thysanotena* bacteria and by *B. vasculorum* when inoculated into maize plants, and considering further the cultural characters which the organism showed at Kew, the opinion is now held that the Mauritius maize disease of 1932 had been caused by *B. vasculorum*.

Up to the present, then, three natural hosts of *B. vasculorum* have been discovered in Mauritius, viz: Maize, *Dictyosperma album* Wendl. and Drude and *Thysanotena maxima* Kuntze.

HOST RANGE OF *B. vasculorum* (COBB) G. SMITH.

After the discovery of the natural hosts of *B. vasculorum* just mentioned, it was deemed important to determine the host range of the organism, in order to guide the researches for the discovery of other possible natural hosts of the pathogen in the island. The following work was therefore carried on, as an extension of S. S. Ivanoff's work on maize and sorghum in America. Inoculations, with the isolations from sugarcane, palm and *Thysanotena* were made on several commonly occurring monocotyledons. As a result the following plants contracted infection: Job's tears (*Coix Lachryma-Jobi* L.).

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Guinea gras (*Panicum maximum* Jacq.)' and a species of giant bamboo (*Dendrocalamus* sp.). *Bact. vasculorum* was reisolated from the stripes produced on the leaves of these plants.

RESISTANCE TESTS ON CANE SEEDLINGS.

Two plots of new seedlings produced by the Sugarcane Research Station were under observation. The border rows of the plots were inoculated early in the year with a mixed suspension of cultures of *B. vasculorum* from cane isolated from various localities in the island and from palm and *Thysanolaena*. Observations on the natural spread of leaf infection to the seedlings were made every two months, and at the end of the year, the stems of all the varieties were examined for gum exudation.

As a result, several varieties were accepted as possessing sufficient resistance to the disease, others were rejected, and a few, of doubtful reaction were included in a new test.

In this connexion, it may be noted that the susceptibility to stem infection was found to be in no case not correlated with a high susceptibility to leaf infection.

STRAINS OF *B. vasculorum* IN THE ISLAND.

The work started in 1936 to detect the possible existence of different strains of *B. vasculorum* on sugarcane in the island was continued this year, and during the crop, diseased material was collected from most factories, and cultures made. The characters of the isolations will be studied later.

LEAF SCALD (CAUSED BY *Bacterium albilineans* ASHBY).

A final observation was made towards the end of the year on the canes in the resistance plot mentioned in the report for 1936. DK.74 and White Tanna were the standard varieties included in the plot. The first, which is a variety practically immune to the disease under field conditions, showed however, as in former tests, a great susceptibility to artificial infection through the cuttings, five stools out of seven showing the disease during the first year of growth. All the diseased shoots died out, most of them through the effect of the disease, and some owing to borer attacks. No case of apparent recovery was noticed. At the close of the experiment this year, no sign of disease was present.

The White Tanna, which is susceptible to the disease in the field, showed but one stool out of six diseased in the inoculated row; that stool died out completely after having produced a succession of diseased shoots. Towards the close of the second year, one stool out of the remaining five became diseased, but it is possible for the infection to have been secondary in this case. Of the six stools in the control White Tanna row, one showed infection in a shoot at an early stage and subsequently recovered apparently completely. At the close of the experiment, three other stools showed scald affected shoots; these may have picked up the disease either secondarily or through latent infection in the cuttings planted. The method, therefore, must be studied further, before it can be used as a reliable test.

SMUT (CAUSED BY *Ustilago scitaminea* (RAB.) SYD.).

For the smut plot laid out in 1936, cuttings on which only one eye had been left were employed and these were dipped in a suspension of spores of the causative fungus before planting. Smutted shoots were produced in from three to seven months after the planting.

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The plot included, amongst others, the varieties BH.10/12, which is very susceptible to the disease and D.109 which is much more resistant to it under field conditions. With both, smutted shoots were produced only by the inoculated rows, the percentage of infection in the two cases, however, being rather small and not in accord with the reaction of the varieties in the field.

Various modifications of the procedure are being tested in a new plot laid out towards the end of the year.

2.—Diseases of Tobacco (*Nicotiana tabacum* L.)

BLACK SHANK (CAUSED BY *Phytophthora parasitica* DAST. EMEND. ASHBY var. *nicotianæ*).

Plantations on an estate in Plaines Wilhems suffered rather badly from an attack of the disease in the early part of the year ; fields laid out later in the season were much less attacked owing to the cooler conditions then prevailing. It would seem, on the whole, that there was a lesser incidence of the disease in 1937 than during 1936.

OTHER DISEASES.

Mosaic was less severe in the Black River district than in previous years. Cases of the enation type of the disease appeared to be more frequent than in 1936.

A field in Plaines Wilhems on nearing maturity showed symptoms which were finally put down as possibly due to potash deficiency. The top leaves of the plants showed a very considerable thickening of the veins, with the intervenal tissue chlorotic or practically white. They were of greatly reduced size, and the margins and tips curved downwards in a characteristic manner. The affection was not transmitted by grafting and diseased plants transplanted into new soil recovered completely. The field was unfortunately reaped during the progress of the investigations.

3.—Diseases of Other Crops.

PINEAPPLE (*Ananas comosus* (LINN.) MERRILL).

The problem of the Wilt disease of pineapple still remains unsolved. It is evident that in certain cases the condition is primarily due to or enhanced by unfavourable soil and weather conditions, as diseased plants have generally recovered when transplanted to new soil at the Central Experiment Station. The observations made during the year tend to indicate that other factors in the island may also be conducive to the diseased condition. Fully established plants on apparently quite good land often rather suddenly develop a characteristic deep pink coloration, the leaves becoming limp and the disease progressing until the death of the plants. Even at an early stage, the roots are noticed dead ; but cultures made of such root tissues failed to give any active parasite, the only fungi commonly appearing in the cultures being *Rhizoctonia* sp. and *Fusarium* sp.

Experiments with plants grown in boxes with glass sides have been started and the progress of the disease in the field is being closely watched. Experiments are also in progress with the mealy bug *Pseudococcus brevipes* Ckll. transferred from wilting plants to healthy ones growing in cases.

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GINGER.

A rather severe blight of ginger occurring on a wide scale in plantations at Montagne Longue was investigated early during the year. A bacterium was isolated from the diseased leaf tissues but failed to give positive results in inoculation tests. Disinfection of the rhizomes before planting has been recommended.

4.—General.

Acknowledgments are made with thanks of the valuable assistance of the Imperial Mycological Institute and the Royal Botanic Gardens, Kew, in the identification of specimens. Useful suggestions made by the Director of the Imperial Mycological Institute during the course of the investigations on *Bacterium vasculorum* were also deeply appreciated.

The undersigned also desires to express his indebtedness to Mr. J. Duhamel, the Plant Inspector, for the help given to him during the whole of his researches on the natural hosts of the gumming disease bacterium, and to Mr. C. A. O'Connor, now Acting Director of Agriculture, for a liberal supply of young *Dictyosperma* plants, which greatly facilitated his studies.

During the year, the usual lectures and supervision of laboratory work in Botany and Mycology at the College of Agriculture, were undertaken by the undersigned. He was also in charge of the Plant Inspection Work at the Customs.

G. ORIAN,

Acting Plant Pathologist.

SUGAR TECHNOLOGICAL DIVISION.

1.—Clarification of Cane Juice.

Further investigations were carried out on cane juice clarification. The main object was to ascertain the best and most economical method of treatment for refractory juices. The general conclusions arrived at can be summarized as follows:

(a) Hot liming without preliminary addition of lime to the cold juice gives a large amount of mud and the work of the filter press station is hindered ;

(b) The addition of lime to the cold juice to a pH of 6.4 followed by further liming at 80–85°C gives better results than integral cold liming ; the clarified juice is brighter and the rate of filtration is improved ;

(c) The preliminary and double boiling process gives a relatively small amount of mud and is of advantage with refractory juices, particularly so when phosphoric acid is added to the juice ;

(d) The hot sulphitation process should be used for clarifying juices of POJ.2727 and 2878, etc., when they remain refractory to any of the simple defecation methods usually employed. Hot sulphitation gives a clear juice and easily filtering muds. This process was successfully adopted on an industrial scale in a factory crushing a large proportion of POJ.2878.

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2.—Polarization of Raw Sugar.

COMPARISON OF ANALYTICAL METHODS.

An exhaustive study of the methods employed in the sugar factory laboratories of the colony as compared with those in force in the official laboratories of the United Kingdom, was made. The conclusions arrived at are: (1) that for 80% of the raw sugar produced the polarization is exactly the same as that obtained in the official laboratories and for 20% the lecture is 0.1° higher; (2) that when differences are recorded in the polarization of consignments of raw sugar as determined in Mauritius before export and as found on arrival in Great Britain, they must be sought for through causes other than analytical methods.

LEAD PRECIPITATE ERROR.

The influence of the addition of the lead reagent before or after bringing up to volume had never been investigated for Mauritius raws. 59 samples of raw sugar were analysed in this connection and the results show a difference of 0.06 pol %. In other words the lead precipitate error for the 59 samples examined is 0.06. This figure is the lowest recorded for raw sugar. The investigation will be pursued next year.

3.—Visits to Factories, Investigations, Etc.

The Sugar Technologist and his assistant visited many factories at the request of Managers. Several problems of specific interest were studied in collaboration with the Factory chemists, and problems of general interest were also investigated during the grinding season.

4.—“Contrôle Mutuel” and Factory Results.

Thirty-four factories forwarded their results for the fortnightly returns which were distributed as usual.

Final figures were received from the thirty-eight factories of the Colony. The results show an average sucrose content of 12.99% cane as compared with 13.67 and 13.14 in 1936 and 1935 respectively. The low figures for 1937 may be attributed to climatic conditions unfavourable to maturation.

Clarification of juice was easy and purity satisfactory. The exhaustion of final molasses shows a decided improvement in factories where the electric conductivity method of pan control is applied.

GENERAL.

Several articles written by the Sugar Technologist and the Assistant Sugar Technologist were published in the *Revue Agricole*.

The undersigned and the Assistant Technologist delivered the usual course of lectures and performed the practical demonstrations to the students of the Agricultural College. The students visited a number of factories under their supervision.

LOUIS BAISSAC,
Sugar Technologist.

DEPARTMENT OF AGRICULTURE

ENTOMOLOGICAL DIVISION.

1.—Staff.

The Entomologist, formerly Phytalus Investigation Officer, was appointed to the Department on March 23rd, and after carrying out survey work in connection with parasites of *Phytalus*, in Natal, arrived in Mauritius on August 5th.

The 2nd Phytalus Officer departed from Mauritius on May 9th in order to collect and ship parasites of *Phytalus* from South Africa. He has remained in Natal until the present time.

2.—Pests of Sugarcane.

PHYTALUS SMITHI. ARR.

This pest continues to overshadow all others in importance, despite the most comprehensive and intensive biological control campaign. Marked improvement in some areas, especially Pamplemousses and Grand Port, is offset by intense infection in the Northern areas of Flacq. The role of the introduced parasites in this state of affairs is difficult to estimate, but a most promising sign is the phenomenal abundance, particularly in the winter months, of the Javan Scoliid, *Campsomeris phalerata* Sauss. The pressing need for Dipterous parasites of both larval and adult stages of the pest is fully recognised in the unremitting searches in overseas countries.

The following summary includes the report of the work of the Chief Phytalus Officer.

During the hand collection campaign from October 1936 to April 1937 which was carried out in Pamplemousses, Rivière du Rempart, Plaines Wilhems, Northern Flacq and parts of Grand Port, 123,478,000 beetles were destroyed, at a cost of Rs. 23,148. Hand collection has been stopped on nearly 66% of the infested areas. In this connection it is satisfactory to note that in the annual larval survey, no signs of increased infection, consequent upon the cessation of hand collection, could be detected. In the Moka area, indeed, a decrease of some significance was recorded. The position is being carefully watched, and collection has ceased in the Pamplemousses and Rivière du Rempart districts in respect of the 1937-38 campaign.

An experiment on the effect of intensive collecting upon the subsequent larval population of a limited area, was carried out at Trianon Estate. A heavily infested field was divided into 3 rectangular plots of 1 acre each. The middle plot was collected intensively by a gang of 10 boys, who made three passages nightly along each of 30 rows. At the subsequent detailed survey made in May 1937, no significant difference between the larval infestation in the collected and non-collected plots was found. One interesting result was that the complete removal of all visible beetles from a row did not in the least affect the numbers present on subsequent nights.

A new centre of infestation has been detected at Henrietta Estate, covering an area of about 30 acres. A scouting gang has been employed, and a total of about 95,440 beetles have been collected.

Of the recently introduced parasites, *Campsomeris phalerata* Sauss. has been found in tremendous numbers on 9 different estates lying between the isohyets 75 ins. and 125 ins. In order to encourage the spread of this important species, 10,215 female wasps have been collected and liberated in colonies exceeding 250, on 26 estates. *Campsomeris annulata* F. has been recovered in

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small numbers on 4 estates. *C. erythrogaster* Dalm., on 4 estates ; *C. rodriquezensis* Brad. on one estate ; and more recently *Scolia rubea* Brad. on one estate. The record is remarkable in that members of the genus *Scolia* are but rarely found attacking a larva of the subfamily *Melolonthinae*. The species breeds freely on *Phytalus* in captivity. *Campsomeris pilosella* Sauss. has not been abundant during the past year.

The Malgache fly has now been identified as the *var. hova* of an African species, *Paratamiclea pallida* Villen. No evidence of the establishment of this species has yet been obtained.

The Elaterid predator, *Pyrophorus luminosus* Ill. has been re-introduced from Puerto Rico, via Farnham House Laboratory, 5,196 larvæ, out of a total of 8,000 shipped from England, being released on 21 estates. Reports of luminous insects having been seen during May 1937, were received, but no further positive evidence of establishment can be expected until next May. Young larvæ of *Pyrophorus* were successfully reared in captivity, and more than 500 released in the field.

A small shipment of the European Dextiid, *Dexia rustica* F. was sent to Mauritius from Farnham House, in cool storage. The parasites within the bodies of their host, *Melolontha melolontha* L. developed rapidly on being exposed to laboratory temperatures. Out of 143 parasitised larvæ shipped, 40 puparia were obtained, and these gave rise to 17 flies. This encouraging experimental shipment is being followed by more extensive investigations in England, and a larger shipment is about to arrive in Mauritius.

After discussion by the Phytalus Advisory Committee, the importation of the Giant Toad, *Bufo marinus* L., under strict control of the Department and of the Health authorities, was sanctioned. The shipment is expected daily, and specially constructed quarantine pools have been prepared.

The search for further parasites of *Phytalus* is proceeding uninterruptedly. The 2nd. Phytalus Officer has already made a number of shipments of South African Scoliids of four species, and a total of 2,500 has been liberated on 13 different estates. The latest shipment includes puparia of a Tachinid, which appears to be an important parasite of the Wattle Chafer, *Hypopholis somneri*. in Natal, being found in from 25% to 33% of all beetles collected. The fly has now been named as *Pexopsis pyrrhaspis* Vilm.

A mission by the Assistant Entomologist to Zanzibar has been organised, with subsequent investigations in North Africa ; both of these places are known to be good sources of host material.

It will be seen from the foregoing summary, that no chance is being neglected of discovering natural enemies which may mitigate the serious depredations of *Phytalus*.

An experiment is being carried out in co-operation with the Sugarcane Research Station on the effect of burning the trash prior to planting canes on heavily infested land. The effects of heavy applications of calcium cyanamide, and of 70 lbs. per acre of white arsenic, are also under observation.

DIATRAEA VENOSATA Wlk.

Owing to the good distribution of rainfall during the maturing season, damage by the spotted borer was generally less severe than usual. Nevertheless, several cases of complete destruction of big canes were seen, from

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15 to 20 borers being found in a single stalk. A routine survey at the cane carriers, on the same lines as in the preceding year, was carried out. 8,800 canes were examined at random on 24 estates, with the following results:

Mean stalk infestation ... 25.6% (range 81% to 3%).

Mean joint infestation ... 11.7% (range 20% to 5.7%).

Intensity index (mean) ... 2.3 (range 3.5 to 1.2).

Parasitism of borer larvæ has been practically negligible, though *Henicospilus antankarus* Sauss. is commonly seen in the field from November to March. The extraordinary difficulty in detecting egg masses of *Diatraea venosata*, has rendered impossible the determination of parasitism by *Trichogramma australicum* Gir.

A comprehensive scheme for increasing the natural control of borers was evolved, which received the approval of the Board of Agriculture. The main lines of work advocated are:

- (1) Parasite search in Ceylon and India.
- (2) Introduction of *Phanurus beneficiens* from Java.
- (3) Introduction of West Indian *Diatraea* parasites.
- (4) Preparations for *Trichogramma* breeding.

3.—Pests of Coconut.

Although the coconut has never been a major cultivation in Mauritius, the palm is threatened with virtual extinction by the Diaspine scale *Aspidiotus destructor* Sign. Should this scale reach the Oil Islands, it would surely and speedily deprive the inhabitants of their chief means of subsistence. Coccinellids of the genus *Chilocorus* are known to be potent agents in control of this scale in a number of countries of the Old World, and in Fiji it has been completely subdued by the Trinidad Coccinellid, *Cryptognatha nodiceps* Mshll. Though the kind co-operation of Dr. P. van der Goot, of the Instituut voor Plantenziekten, Java, shipments of *Chilocorus politus* Muls. and of *Scymnus* sp. have been received. The Assistant Entomologist was assigned to the project of rearing and liberating these predators, and the following is a summary of his report.

The first shipment of *Chilocorus* was received in March 1937 when 347 beetles were liberated at Pointe aux Sables. On June 2nd, the insect was recovered, and in September, with the support of Government, intensive mass breeding work was started. Up to the present time, 4,510 *Chilocorus* and 560 *Scymnus* have been liberated. Further shipments of predators and of Chalcid parasites are expected from Java.

Concurrent biological investigations have established the life cycle of *Aspidiotus* at Réduit (mean temperature 20°C.) at 32 days for males and 35 days for females, whilst that of *Chilocorus* varies from 19 to 32 days with a mean of 24 days. This compares favourably with *Cryptognatha*, of Fiji.

The role of the ubiquitous black ant, *Technomyrmex detorquens* Wlk. in preventing control of scale by predators becomes important when the weakened trees are also attacked by *Pseudococcus* sp. which is assiduously farmed by the ant. Control of the latter by grease banding is nullified largely by the ability of workers to become fertile, and to establish nests at the bases of the fronds.

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4.—Pests of Tobacco.

The chief pest under this heading is *Lasioderma serricorne* L., which attacks baled tobacco at the Government Tobacco Warehouse. Owing to the wholly unsuitable nature of the buildings, from the entomological viewpoint, optimum conditions for the increase of insect pests exist. Adhesive light traps have proved inadequate to cope with evergrowing infestation.

A fumigation with hydrogen cyanide was carried out, after extensive operations to render the stores gastight. Calcium cyanide granules were spread on the moistened floors at the rate of 2 lbs. per 1,000 cubic feet. It is impossible to assess the value of this measure until the season of mass emergence of the beetle, in May-June. Light fumigations with Cyanogas at the rate 2 Ozs. per 1,000 cubic feet are being carried out every 15 days throughout the stores.

As a preventive measure, Kenya Pyrethrum powder is being dusted on the floors, and upon Hessian curtains placed between the stacks of bales, every fortnight at the rate of 1 lb. per thousand square feet.

Biological investigations carried out by the Scientific Assistant show that the life cycle of the beetle varies from 50-60 days in summer. The Clerid predator, *Thaneroclerus buqueti* Lef. appears to exert a considerable seasonal influence upon the beetle population, as does an unidentified Chalcid parasite. Measures, such as the wrapping of bales in stout paper, and the removal of butts before baling are being studied.

It appears that the only radical measure is to separate the stocks of different ages under conditions such that the bales can be treated by fumigation.

5.—Pests of Pineapple.

The appearance of severe wilting of maturing pineapple plants in the experimental plantations of the Department, suggests the presence of Hawaiian wilt disease. In Mauritius, we have not yet obtained any correlation between wilt and the presence of *Pseudococcus brevipes* Ckll. though the latter is found on nearly every plant, and frequently causes retardation of growth of isolated plants. Continuous field observations, and intensive insectary studies of the role of the mealy bug in relation to this wilt, are being carried out. The presence of *Heterodera* sp. in the roots has been recorded.

Diaspis bromeliæ Kern. has been recorded for the first time causing considerable local damage to pineapple, by attacking the outer leaves, usually on the under side. The Javan Coccinellid, *Chilocorus politus* Muls. feeds readily on this scale, and colonies have been released on Trianon plantation.

6.—*Icerya seychellarum* Westw.

The importation of *Rhodolia cardinalis* from South Africa, was successfully carried out, in co-operation with the Union Department of Agriculture, 88 beetles emerging from 92 pupæ shipped. More than 100 beetles were released from insectary cages, but it is now suspected that in-breeding is weakening the stock, and further shipments may be required for establishment. The new host appears to be very well suited to the predator, both for feeding and for reproduction.

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7.—Miscellaneous Pests.

The following miscellaneous pests have been recorded during the period under review :

Pest	Host	Locality	Month	Remarks
<i>Gryllotalpa africana</i> de B.	Sugar	Savanne	April	Paris green bait.
<i>Brontispa limbata</i> Waters.	Palmiste	Savanne	November	
<i>Xyleborus morstatti</i> Haged.	Avocado	Pointe aux Sables	October	Severe pruning of branches.
<i>Bostrychoplites cornutus</i> Ol.	Vitex planks	Port Louis	November	Treatment with hot water 60°C. ter 55° to
<i>Stromatium barbatum</i> F.	Filao	Mahebourg	November	Destroyed fencing poles.
<i>Agrotis ypsilon</i> . Rott....	Pine seedlings	Curepipe	November	Paris green bait.
<i>Hemichionaspis minor</i> ...	Fourcroya	Black River	December	
<i>Maruca testulalis</i> Geyer.	Beans	Moka Rose-Hill	November	Severe attacks on pods.
<i>Tylenchus</i> sp. ...	Sugar	Bénarès	October	30 acres affected.
<i>Chionaspis tegalensis</i> Zehnt.	Sugar	Médine	December	Preyed on by <i>Chilocorus politus</i> Muls.

8.—Publications.

The following have appeared in the "Revue Agricole."

- (1) Mission entomologique à Madagascar en 1936.
- (2) Note sur l'introduction, la distribution, et l'élevage de la mouche tachinaire importée de Madagascar en 1936.
- (3) Notes sur l'introduction, à Maurice de nouveaux prédateurs de la cochenille du cocotier, *Aspidiotus destructor* Sign.
- (4) Projet des travaux de recherche se rapportant sur le contrôle biologique des borers de la canne à sucre à Maurice.

The following will shortly be published in England :

- (5) Thesis "On biological control of white grubs with special reference to *Phytalus smithi* Arr."
- (6) A systematic study of Species of the genus *Campsomeris* Guer. introduced into Mauritius for the control of *Phytalus smithi* Arr.

9.—General.

The Entomologist and Assistant Entomologist carried out lecturing and demonstrating duties in the Agricultural College.

Complete re-organisation of the economic collection of the Division has been begun by the Scientific Assistant. The accession number system of note recording for all Officers has been introduced.

Examination of incoming plant material at the Port was carried out two days per week by Officers of the Division.

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10.—Acknowledgments.

I wish to acknowledge gratefully, the assistance of Sir G. A. K. Marshall and of Dr. W. R. Thompson in obtaining predators and parasites of white grubs from the West Indies and from England ; of Dr. P. van der Goot in the shipment of *Aspidiotus* predators from Java ; of Mr. S. Joubert of the University of Stellenbosch in the shipment of *Rhodolia cardinalis* ; and of Dr. Naudé, Union Entomologist, in my preliminary survey of white grub parasites in South Africa.

W. F. JEPSON,
Entomologist.

CHEMICAL DIVISION.

(A) INVESTIGATION WORK.

1.—Tobacco.

The causes which give rise to the "objectionable tang" which characterises the Mauritius tobacco are not known. The object of the investigation now in hand is an attempt to solve this problem.

The mineral constituents, as well as the nicotine content, ether extract etc., of forty one samples of locally grown tobaccos have been determined in order to compare the figures obtained with the data given for imported tobacco known to be of desirable flavour.

The following figures are the extremes of the 41 analyses of various varieties of tobacco grown at different parts of the island.

The figures are calculated on a standard moisture content of 14% :

	Local		Foreign	
	Per cent	Per cent	Per cent	Per cent
Potash (K_2O)	0.97	to 6.36	2.50	to 3.50
Lime (CaO)	1.30	„ 6.94	3.00	„ 5.00
Chlorine	0.55	„ 3.26	less than	1.00
Sulphur (SO_2)	0.80	„ 0.93	1.00	„ 2.50
Phosphorus Pentoxide (P_2O_5)	0.03	„ 1.00	0.04	„ 1.00
Chlorine	0.55	„ 3.26	less than	1.00
Ash	11.89	„ 19.73	12.88	„ 16.00
Nicotine	1.77	„ 4.22		
Nitrogen (Total)	1.30	„ 3.70		
Petroleum Ether extract	2.46	„ 5.65		

It can be seen from above that the variations are of such magnitude that it is not possible to draw any conclusive deduction therefrom. As it has been claimed that in many cases a correlation may exist between the constituents of the smoke and the quality of the tobacco, work was carried along these lines. A chemical analysis, involving the usual determinations was carried out on local promising varieties of tobacco as well as on tobacco of reputed good flavour, simultaneously the same analyses were performed on the smoke of the said tobaccos, in order to define the characteristic of smoke in terms of its chemical composition and to relate these characteristics to the composition of the tobacco from which it is derived.

The analytical figures are given below.

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TOBACCO AND SMOKE ANALYSES.

	1	2	3	4	5	6	7	8
	Cigarette made from imported Tobacco (good flavour)	Cigarette made from locally grown Tobacco	Rivière du Rempart (North Coast)	Rivière du Rempart (North Coast)	Rivière du Rempart Inland	Black River (South West Coast)	Black River South East Coast)	Plaines Wilhelms Inland
1. TOBACCO.								
Total Volatile Bases	...	...	...	...	...	...	...	...
(in c.c. of 0.025 N)	561.4	794.2	802.8	760.9	608.6	512.6	765.1	455.6
„ due to Nicotine	350.0	512.5	420.0	350.0	245.0	357.5	387.5	270.0
„ „ other bases	216.4	281.7	382.8	410.9	363.6	155.1	377.6	185.6
Total Volatile Acids	290.0	155.7	476.0	608.6	484.8	321.5	459.0	303.8
(in cc. of 0.025 N)	...	...	...	...	...	...	...	...
Bases/Acids	1.93	5.10	1.68	1.24	1.25	1.59	1.66	1.49
Ash	12.09	17.42	16.52	17.37	15.45	14.70	17.46	13.70
Nicotine	1.40	2.05	1.68	1.40	0.98	1.43	1.55	1.08
Nitrogen (total)	1.28	1.99	2.49	2.00	1.45	2.10	1.94	1.92
Nicotine/Nitrogen	1.08	1.03	0.67	0.70	0.67	0.68	0.79	0.56
Amino Nitrogen	0.294	0.335	0.426	0.348	0.348	0.332	0.350	0.408
Chlorine	0.82	2.51	1.56	2.65	1.03	1.81	2.38	1.62
Reducing Sugars (dextrose)	18.29	6.49	4.74	5.27	5.95	9.00	9.14	12.11
Starch	0.090	traces	nil	nil	traces	traces	nil	nil
Water Extract	52.64	45.25	47.83	48.39	49.31	52.30	57.80	50.02
Petroleum Extract	5.91	5.63	4.93	5.68	5.28	4.84	4.97	4.74
Water Extract/Petroleum Extract	8.90	8.03	9.70	8.51	9.33	8.73	11.62	10.55
2. TOBACCO SMOKE.								
Total Volatile Bases	3.40	3.78	4.20	2.30	2.20	3.40	—	2.40
(in c.c. of 0.025 N)	...	...	...	...	...	...	...	...
„ due to Nicotine	1.70	1.88	2.17	1.00	1.02	1.05	—	1.22
„ „ other bases	1.70	1.90	2.03	1.30	1.18	1.35	—	1.18
Total Acids	8.45	5.00	4.00	2.40	3.60	3.90	—	2.00
(in c.c. of 0.025 N)	...	...	...	...	...	...	...	...
Bases/Acids	0.40	0.75	1.05	0.95	0.61	0.61	—	1.20
Formic Acid	0.001	0.001	0.002	0.001	0.001	0.001	—	0.001
Nicotine	0.0068	0.0076	0.0087	0.0040	0.0041	0.0042	—	0.0049

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It is too early at this stage from the data of this preliminary work to state to what degree the flavour may be particularly influenced by any individual factor, but, however, it seems, for instance, that the sugar content of the flue cured tobacco is to be considered as a factor of importance in the distinctive character of its aroma.

Other lines of investigation are also contemplated for next year.

2.—Application of fertilizers to pastures.

The effect of the application of fertilizers on the mineral content of local pastures at different stages of growth was studied. The fertilizers were applied in early August in the preceding year, at the following rate per acre:

Field A. 80 kgs. of Super niciphos (14% N and 42% P_2O_5).

„ B. 80 „ „ of Compound C. Fertilizer (8% N, 21% P_2O_5 and 16% K_2O).

„ C. 100 „ „ of Guano phosphaté (27% P_2O_5).

„ D. Control.

These experiments are still in hand but in order to show the effect of the above fertilizers on the mineral composition of *Stenotaphrum dimidiatum* Brongn., the following figures may be quoted.

Time of Harvest	Field	Moisture	Ash	Silica	CaO	Cl	K_2O	P_2O_5	Ni-trogen
		%	%	%	%	%	%	%	%
February 20th	A	... 76.9	9.75	3.53	0.58	2.18	1.96	0.26	1.14
„	B	... 75.6	9.64	2.28	0.72	2.15	2.17	0.31	1.19
„	C	... 72.8	9.86	3.64	0.44	2.16	2.20	0.25	1.17
„	D	... 73.2	9.54	2.59	0.74	2.05	2.10	0.25	1.13
April 29th	A	... 84.3	11.45	4.88	0.76	2.85	2.52	0.50	1.34
„	B	... 82.4	11.43	4.00	0.74	2.10	2.31	0.51	1.45
„	C	... 81.5	11.64	3.49	0.73	2.21	2.10	0.44	1.41
„	D	... 81.3	10.06	4.26	0.63	2.04	2.13	0.39	1.35
August 26th	A	... 74.6	11.07	3.45	0.63	2.14	2.12	0.40	1.58
„	B	... 73.2	11.83	3.57	0.86	2.40	2.26	0.44	1.59
„	C	... 69.4	11.02	4.15	0.80	1.88	2.41	0.45	1.50
„	D	... 72.0	12.50	3.00	0.76	2.07	2.16	0.27	1.55

Field	Yield per arpent				Yield of leaf per acre	
	Tons				Tons	
A	...	...	22.150	...	...	13.560
B	...	...	22.450	...	...	11.274
C	...	...	17.300	...	...	7.348
D	...	...	13.800	...	...	5.338

No considerable variation is observed in the mineral composition of fields A, B, and C respectively but the effect of the fertilizer application in increasing the yield is striking.

3.—Soil.

A soil investigation was undertaken at the request of the Agricultural Superintendent of Rodrigues in order to determine to what extent the mineral constituents of the soil may be associated with the flavour of the tobacco grown in Rodrigues.

Four samples of typical Rodrigues soils were analysed, the figures are given below as well as the grade of tobacco produced thereon.

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MECHANICAL ANALYSIS.

Serial No.		1	2	3	4
Stones and Gravels	...	0.6	0.5	0.1	0.0
Coarse sand	...	1.0	1.2	0.9	2.6
Fine sand	...	7.9	14.9	13.1	25.9
Silt	...	19.8	20.1	24.3	30.0
Clay	...	68.8	61.7	59.4	39.1
Organic matter	...	2.4	2.3	2.3	2.4
Moisture	...	9.2	11.2	11.78	10.64

CHEMICAL ANALYSIS (Figures expressed in grms. % grms. dry matter).

Serial No.		1	2	3	4
Nitrogen Total	...	0.146	0.152	0.184	0.175
Organic Carbon	...	1.39	1.42	1.31	1.42
Carbon/Nitrogen	...	9.5	9.3	7.1	8.1
Total Potash (K_2O)	...	0.102	0.049	0.105	0.180
„ Phosphoric Acid (P_2O_5)	...	0.132	0.181	0.181	0.180
Exchangeable K_2O	...	0.046	0.028	0.016	0.084
„ P_2O_5	...	0.00066	0.00034	0.00079	0.00833
Lime Reqnt. (CaO tons per acre)...	...	2.65	2.65	2.65	1.5
Insoluble Matter in strong HCl	...	38.2	35.5	40.2	52.1
pH	...	6.5	6.5	6.6	6.4
Grade of Tobacco	...	Good	Fair	Fair	Best Quality

These soils (1, 2 and 3) present the characteristic feature of the "red soils" generally found in Mauritius in dry districts. They contain a high percentage of clay and their pH values approximate that of neutrality. Their potash and phosphate status respectively are quite normal compared with Mauritius soils of this type *i.e.* they present good texture but are on the whole deficient in potash and phosphoric acid.

On the other hand soil No. 4, which is a greyish soil, probably alluvial stopped by a coral barrier, differs from the above in its physical as well as in its chemical composition, the potash and phosphate status may be considered as satisfactory; the quality of tobacco grown thereon is good although the yield is not so high as No. 2 and No. 3.

4.—Uptake of Minerals by Pineapple plants.

It has been suggested that an application of fertilizers to a pineapple plantation is not likely to be of value until the plants are six months old.

Experiments were started in order to elucidate this point and in this connection pineapple plants selected at random, were analysed at different stages of growth. The determinations included moisture content, nitrogen, phosphate, potash and lime. The result of this work which is still in hand will be presented later on.

5.—Hydnocarpus Oil.

A certain amount of oil from the seeds of *Hydnocarpus wightiana* was obtained (*a*) by expression (*b*) by extraction by means of volatile solvents. The expressed oil has a faintly yellow colour and a characteristic odour. The extracted oil has a lower melting point and the solvent used (petroleum ether and ethyl ether) has altered the characteristic flavour by imparting an objectionable odour to the oil. A sample of each has been forwarded to the Imperial Institute for expert report.

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6.—Ensilage.

Experiments on ensilage are still in hand, a silo (16 ft. x 10 ft.) has been built at Labourdonnais Sugar Estate at a cost of Rs. 450 and filled with cane tops ; a similar silo is to be built at the Government Dairy, Curepipe, but mixed herbage will be used.

7.—Milk.

The periodical analyses of milk from the Government Dairy were carried out as usual during the year.

The averages for both morning and evening milk are given below ;

			Morning milk	Evening milk
Fat	...	...	3.6 %	4.1 %
Total Solids	...	...	11.82%	12.58%
Specific Gravity	...	...	1029.1	1029.2

The variations shown by individual samples are as follows:

			Morning milk		Evening milk
Fat	...	...	2.8 % to 4.5 %		2.4 % to 5.0 %
Total Solids	...	...	11.17% to 12.89%		11.64% to 13.63%
Specific Gravity	...	...	1028.2 to 1031.3		1028.0 to 1031.1

(B) ROUTINE ANALYSES

The routine work showed a slight increase during the year under review as compared with the preceding year.

			Samples received	Estimations
Guano mélangé	...	...	5	17
Lime	...	...	3	3
Dipping	...	...	36	64
Phosphatic manure	...	...	17	21
Nitrogenous manure	...	...	9	20
Fumier	...	...	20	39

In addition to the above, and in connection with investigational work, the following determinations were performed:

			Samples received	Estimations
Soils	...	...	4	60
Fodders	...	...	29	261
Pineapple plants	...	...	16	96
Beeswax	...	...	1	—
Oils	...	...	2	2
Feeding Stuff	...	...	2	12
Miscellaneous	...	...	1	1
Milk	...	...	30	90

(C) EDUCATION.

The usual duties in relation to the teaching of chemistry at the Mauritius College of Agriculture were performed by the Lecturer in Chemistry ; during the absence of the Assistant Lecturer Mr. F. Berchon on leave Mr. R. Mamet Scientific Assistant was temporarily in charge of the first year students.

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(D) MISCELLANEOUS.

In view of the investigation undertaken by the Chemical Division on the improvement of flavour in Mauritius Tobacco, the service of an analyst, Mr. E. Haddon, has been secured.

R. LINCOLN,

Chemist.

TOBACCO DIVISION.

The work of the Division was confined to trials with single plant selections made from the new varieties introduced from Canada, India, Nyasaland and Uganda. The object of the trials being to obtain a variety with a flavour more suitable for the export market.

The Government Tobacco Officer proceeded on leave of absence on the 21st January and resumed duty on the 3rd November. During his absence the Division was in charge of the Agronomist.

Conditions were fairly favourable during the growing period and the rainfall at the Tobacco Station, La Ferme, was better distributed than in the previous year, as will be seen hereunder.

Month	1936 Inches	1937 Inches
January	8.35	5.73
February	4.70	10.21
March	1.00	8.16
April	0.71	0.97
May	0.72	5.53
June	0.53	0.62
July	0.16	1.27
August	0.06	0.31
September	0.12	0.79
October	6.98	0.59
November	0.90	1.68
December	6.96	0.92
Total	31.19	36.78

The trials were divided into two groups, viz:

(a) Flue Cured variety trials.

(b) Air Cured Variety trials.

and each group was grown under the same manurial treatment and plants obtained from seed from single plant selection in the previous year were utilised.

A. FLUE CURED VARIETY TRIALS.

In this trial the following varieties were tested:

Virginia Bright	...	S.P.S. 6.	introduced from Canada.
Jamaica Wrapper	...	6.	" "
Bonanza	...	6.	" "
White Mammoth	...	4.	" "
Yellow Mammoth	...	6.	" "

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Pusa Hybrid 142	...	S.P.S.	6.	introduced from India.
Pusa Hybrid 177	...	"	6.	"
Adcock	...	"	3.	"
Harrison's Special	...	"	6.	"
Gold Leaf	...	"	3.	South Africa.
Cash	...	"	3.	Nyasaland.
Narrow Leaf Orinoco	...	"	3.	Nyasaland.

A total of 12 varieties and 58 single plant selections; the area of the Station is too small to allow of all the varieties available being tested.

All the varieties were grown under a standard fertilizer mixture analysing 3 N. 10 P. 6 K. and applied at a rate equivalent to 400 kilos per acre. The mixture was made up as follows:

		Kilcs	N.	P.	K.
Nicifos 18/18	...	67	12	12	—
S. of Potash	...	50	—	—	24
Super Phosphate	...	175	—	28	—
			12	40	24

The fertilizer was applied before planting, the requisite amount being applied to the place the plant was to occupy in the field and well mixed with the soil. Planting was done at distances of 3 feet between the rows and 2½ feet within the rows.

The seed was sown during March and planting in the field was done during late April and early May. The plants made good progress and all varieties grew well, though the following varieties suffered severely from Black Shank, viz: Virginia Bright, Jamaica Wrapper, Bonanza, Pusa Hybrids and Harrison's Special, whilst other varieties were attacked slightly in comparison. The type of leaf was good and the varieties Yellow Mammoth, White Mammoth, Virginia Bright, Jamaica Wrapper and Bonanza cured well, though difficulty was experienced due to curing several varieties in the same barn. The yields were fair but these could be improved by further selection. The mean yields and average value per kilo are set out hereunder.

Variety	Mean Yield per acre Kilos	Average value per kilo. Rs. cts.
Virginia Bright	415.8	1.36
Jamaica Wrapper	361.3	1.32
Bonanza	328.2	1.27
White Mammoth	369.0	1.14
Yellow Mammoth	354.0	1.29
Pusa Hybrid 142	290.9	1.27
Pusa Hybrid 177	290.2	1.16
Adcock	258.3	.56
Harrison's Special	633.8	1.04
Gold Leaf	348.3	.75
Cash	492.4	1.06
Narrow Leaf Orinoco	414.3	1.07

Smoking tests have been carried out with the cured leaf from the above varieties with the following results and, it will be seen that they are almost identical with the previous year's tests. Vide Annual Report, 1936.

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SMOKING TESTS.

Virginia Bright	Slight earthy tang. Medium strength. Burns freely. Ash light grey, very fine and powdery, holds well.
Jamaica Wrapper	No tang. Neutral flavour, mild. Burns freely. Ash grey with brown tinge, flakey.
Bonanza	Very slight tang, mild. Slight cigar flavour. Burns freely, ash dark grey and flakey.
White Mammoth	Slightly earthy tang, full flavour. Burns freely. Ash very dark, flakey and does not hold well.
Yellow Mammoth	Slight trace of earthy tang. Very full strong flavour, though pleasant. Ash dark and holds well.
Pusa Hybrid 142	Strong earthy tang, unpleasant. Burns fairly well, ash dark.
Pusa Hybrid 177	Very strong earthy tang, most unpleasant. Burns fairly well. Ash very dark.
Adcock	Very slight tang, medium flavour, hot. Burns freely. Ash light and holds well.
Harrison's Special	Pronounced tang, mild. Burns very freely. Ash light and holds well.
Gold Leaf	No tang, neutral flavour, mild. Burns well. Ash dark and flakey.
Cash	No tang. Full and strong flavour. Burns freely. Ash dark and flakey.
Narrow, Leaf Orinccoo	Slight earthy tang, medium strength. Burns freely. Ash dark.

The grade of leaf tested was the same for all varieties, viz: L.M.F. or lower medium leaf.

The varieties Pusa Hyrid 142, Pusa Hybrid 177 and Harrison's Special produce a type of leaf with a pronounced tang and will, therefore, not be included in future trials with single plant selections, but will be given one further trial in a small plot and, if results are the same, will be discarded.

B. AIR CURING VARIETY TRIALS.

In this trial four varieties were utilised, viz:

Greenwood	...	...	introduced from Canada.
Maryland	...	...	" " Réunion.
Improved Clarksville	...	...	" " Uganda.
Western S.	...	...	" " "

The seed was sown early in April and planted in the fields during late May. The fertilizer treatment was the same as for the flue cured varieties and, with the exception of Improved Clarksville, which did but moderately well in the field, the varieties grew well. The variety Improved Clarksville was severely attacked by Black Shank, the other varieties but slightly in comparison.

The mean yield per acre and average value per kilo are set out hereunder.

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Variety	Mean Yield		Average value	
	Kilos per acre		Rs. cts. per kilo	
Greenwood	...	272.7	...	0.97
Maryland	...	293.7	...	0.63
Improved Clarksville	...	222.7	...	0.69
Western S.	...	266.4	...	0.78

No smoking tests were carried out with the air cured leaf as through a misunderstanding the varieties were all mixed after grading at the Warehouse and no samples retained.

GENERAL.

The main irrigation canals in Field 2 were reconstructed in concrete during the year.

The windbreak of Eucalyptus trees planted during 1936 and the hedge of (*Pithecolobium inguis-cati*) " Bread and Cheese " made good progress.

The buildings were all repaired and rethatched during the year.

GEOFFREY CORBETT,
Government Tobacco Officer.

VETERINARY DIVISION.

HEAD I.

(a) DISEASE CONTROL.

(1) *Field Operations.*

These consist in the detection and treatment of cases of contagious diseases which stand as follows in order of importance:

(i) Trypanosomiasis ; (ii) Tuberculosis ; (iii) Piroplasmosis ; (iv) Poultry diseases.

In connection with the control of the above mentioned animal diseases the following number of inspections were made by the members of the Veterinary Division on estates and villages during the year:

	1937		1936	
Stock Inspectors	...	1,028	...	983
Veterinary Officer	...	220	...	207

(i) TRYPANOSOMIASIS.

The following table shows the number of blood smears taken and examined by the Officers of the Division during the year under review:

				Animals		Blood Control		Total	
				Bovine	Equine	Goats	Dogs	1937	1936
Estates	...	...	...	12,890	156	—	—	13,046	16,972
Draught Animals, Rouliers	...	...	...	1,065	38	—	—	1,103	426
Dairy animals Government	...	...	...	1,160	—	—	—	1,160	1,238
" Private	...	...	...	495	—	—	—	495	348
Fort William Quarantine Station	...	...	...	148	107	76	—	331	540
Government Animals	...	...	...	495	94	142	71	802	106
Total	...	...	...	16,253	395	218	71	16,937	19,630

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The positive cases recorded are as follows:

		Bovine		Equine		Bovine		Equine		1937	1936		
		Estates				Roulriers				Total			
T. Evansi	...	...	17	...	5	...	10	...	6	...	38	...	39
T. Vivax	...	...	19	...	—	...	8	...	—	...	27	...	28
T. Theileri	...	...	—	...	—	...	—	...	—	...	—	...	1
Total		...	36	...	5	...	18	...	6	...	65	...	68

The eleven equines affected were 5 horses, 4 mules and 2 donkeys, they have been treated with "Naganol" and cured. The 27 bovines affected with T. Evansi were treated either with atoxyl and arsenious acid or tartar emetic, and recovery was the final result in each case. Those affected with T. Vivax, 27 in total, have undergone treatment with tartar emetic equally with successful results.

It should be remarked here that, when one individual bovine in a herd is found infected with trypanosomiasis, the whole herd is generally considered as infected, since it is admitted that the parasite may not be detected in the blood smear although the animal is infected. Consequently, in addition to the 65 animals mentioned above as being infected, some 2,000 head of cattle have during the year been treated by the Officers of this Division all over the Island.

(ii) TUBERCULOSIS.

The following table shows the number of animals which have been tested for tuberculosis:

		Estates		Govt. Dairy	
Milch	{Cows	...	6	...	17
	{Heifer	...	1	...	—
Herd Cows	...	...	8	...	—
Total		...	15	...	17
Reactions	{Positive	...	2	...	—
	{Doubtful	...	2	...	—

The two herd cows which reacted positively have been destroyed, while the two milchcows with doubtful reactions have been isolated for subsequent testing.

In 1936, 75 bovines were tested with 3 positive reactions.

The number of doses of BCG vaccine issued until 18th September was 810. Since that date the preparation of vaccine for bovines has been discontinued by the Bacteriological Laboratory and calves born from that date have not consequently been vaccinated.

The number of doses delivered in 1936 was 1,582 and 1,618 in 1935.

(iii) PIROPLASMOSIS.

No case of Piroplasmosis was recorded during the year as against 4 cases in 1936 and 37 in 1935.

(iv) POULTRY DISEASES.

The fowl pox preventive vaccination was applied in many centres with satisfactory results.

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Many outbreaks of fowl cholera were reported and owing to preventive measures taken by the neighbouring breeders under the guidance of this Division, the outbreaks were successfully circumscribed.

2.—Research Operations.

The research operations have been confined to cases of abortion among cows of the Government Dairy. After exhaustive tests had been carried out to eliminate the causative organisms recorded elsewhere as responsible for abortions, it was assumed that the streptococcus detected in the blood of the rejected foetuses was the actual cause. A vaccine was then prepared according to Bedreska's method and its application has given satisfactory results.

The number of cases of abortion which had passed from 12 in 1935 to 4 in 1936 remained 4 in 1937.

(b) ANIMAL HUSBANDRY.

(1) *Field Operations.*

These have only recently been systematised in connection with the scheme for the development of beef production in the Colony. Herd registers are being established for the main breeding herds and the ear-marking of calves is being proceeded with. Propaganda for the proper housing and feeding of herds is steadily gaining ground.

(2) *Research Operations.*

The research operations of this sub-head are at present confined to the experimental cultivation of fodder grasses. Demonstration plots are being established at the Government Dairy, Curepipe; Central Experimental Station, Réduit; and Royal Botanical Gardens, Pamplemousses. Several estates have also started experimental plots with indigenous and imported varieties of fodder plants.

(c) IMPROVEMENT OF MARKETING OF ANIMALS AND ANIMAL PRODUCTS.

The field of work under this heading is limited to surprise visits to slaughter houses of the Colony. 54 such visits were paid by the Veterinary Officer during the year. Two carcasses of bullocks seized for tuberculosis were examined and caused to be destroyed. Two heifers of the milch breed which had been slaughtered outside abattoirs were caused to be seized and the owners were prosecuted.

116 cows and heifers of the milch breed, under the age of 5 years, were examined and on being found unfit for reproduction were allowed to be slaughtered in abattoirs.

(d) VETERINARY EDUCATION.

Lectures have been given to students of the Agricultural College throughout the year in Anatomy, Physiology, Pathology and Animal Husbandry.

HEAD II.

STATISTICAL INFORMATION CONCERNING THE LIVESTOCK INDUSTRY.

(a) IMPORTATION OF ANIMALS.

The following animals were imported from dependencies and foreign countries during the year.

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	From Dependencies			From Foreign Countries	
	1937	1936		1937	1936
Bovines	610	492	...	5,967	5,767
Equines	5	15	...	7	15
Pigs	2,215	2,263	...	—	—
Sheep	767	637	...	—	2
Goats	4,570	4,981	...	—	—
Dogs	10	—	...	5	8
Turtles	405	275	...	—	—
Poultry	28,767	6,364	...	—	—
Cats	—	—	...	2	—

(b) EXPORTATION OF ANIMALS.

The following is the number of animals exported to dependencies during the year under review:

Horses 2 ; Mares 3 ; Goats 4 ; Total 9.

(c) QUARANTINE.

(1) *Réduit Government Kennels.*

The following animals were quarantined at this station for a period of six months:

2 dogs ; 3 bitches ; and a pair of cats. A monkey, on transit, stayed 15 days at this quarantine station.

(2) *Fort William Quarantine Station.*

Animals kept under observation there, were as follows:

- 1 Pure bred Friesland bull imported from South Africa for the Government Dairy.
- 1 Pure bred Ongole bull imported from India for " Belle Mare Estate."
- 1 Race mare from India.
- 1 Boar and 1 sow of Large White breed imported from South Africa for the Mental Hospital.
- 2 Horses and 3 mares pending their shipment to " Diégo " and " Agaléga " Islands.

All the above mentioned animals were delivered to their respective owners in healthy condition after the adequate period of observation.

F. E. LIONNET,

Veterinary Officer.

GOVERNMENT DAIRY.

YIELD OF MILK.

92,985 litres of milk were produced during the year as against 94,606 litres in the previous year. The milk was disposed of as follows:

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	1937	1936
Supplied to Government Hospitals ...	15,459	18,955
Supplied to the Public ...	72,714	70,290
Fed to calves ...	4,402	4,932
Samples for control ...	410	429

The demand from the public is steadily increasing and at frequent periods during the summer months, the demand exceeded the supply with the result that a "waiting list" has had to be established.

BIRTHS.

36 births were recorded: 17 males and 19 females. Of these, one calf was still-born and two others which were abnormally weak at birth died subsequently.

DEATHS.

No cases of death among the adult animals were recorded during the year.

SALES.

24 calves were sold to breeders within the first fortnight of their life, 16 males and 8 females; five females were sold to the butcher viz: 4 more or less old cows, on account of sterility or blind teats, and one heifer, which was definitely considered as sterile after exhaustive tests. The two elder bulls of the dairy were also sold to breeders during the year to make room for the young pure bred bull imported from South Africa. One bull and one grown-up heifer were exported to Rodrigues.

ABORTION.

Four cases of abortion were recorded, as in the previous year.

HEALTH CONDITION.

The blood of all animals of the dairy herd was frequently examined during the year for trypanosomiasis and results were negative.

Tuberculin tests were carried out as in previous years and proved that the dairy herd continues to be free from tuberculosis. The number of cases of retention of afterbirth was negligible: only three being recorded during the year.

GENERAL REMARKS.

The chemical tests, by the Chemist of the Agricultural Department, and the bacteriological tests, by the Bacteriological Laboratory, were applied to the milk at regular intervals and results were highly satisfactory.

IMPORTATION OF SIRE.

A pure bred Friesland Bull was imported from South Africa during the year and joined the herd in September, at the age of 17 months. His introduction is intended not only for preventing excessive in-breeding but also for raising the standard of the herd. He is a fine specimen of the breed and his mother as junior 4-year produced in 300 days over 6,000 litres of milk averaging 3.77% butter fat. He was carefully selected from the reputed herd of "Nel's Rust," Natal, by Professor Lindsay Robb to whom I beg leave to pay here a tribute of gratefulness for his expert assistance.

YVES LEFEBURE,

Officer in Charge.

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Dr. PROFIT AND LOSS ACCOUNT FOR THE YEAR ENDED 31st DECEMBER, 1937. Cr.

	Rs.	Rs.	Rs.	Rs.
To Valuation of Live Stock, 1st January, 1937	15,070.10	14,425.00		
" Grain, Fodder, etc., consumed	1,944.00			
" Litter	3,876.90			
" Wages	2,300.00			
" Salaries	2,377.30			
" Transport and Travelling on Milk Deliveries	1,157.82			
" Incidental Expenses, including Water				
" Repairs and Upkeep of Plant etc., and Buildings	1,862.61			
" Depreciation of Plant, Furniture and Fixtures	28,588.73			
"	278.38			
	Rs. 43,292.11			
	225.22			
" Profit for year, carried to Capital Account	Rs. 43,517.33			
				Rs. 43,517.33

By Sales:				
Milk	...	...	...	22,057.06
Live Stock	...	...	...	1,896.00
Manure	...	...	...	3,240.00
Sundries	...	...	...	99.27
" Valuation of Live Stock, 31st December, 1937	...	...	...	27,292.33
				16,225.00

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BALANCE SHEET AS AT 31st DECEMBER, 1937.

LIABILITIES		ASSETS	
	Rs.		Rs.
<i>Capital Account—</i>			
as per last Balance Sheet	89,673.75	Land, as at 1st January, 1937	6,000.00
add Debtors 31.12.1936 not included	1,618.06	Buildings, as at 1st January, 1937	62,500.00
		Plant, Furniture and Fittings, as at 1st January, 1937	4,395.50
True Capital, 1st January, 1937	91,291.81	less Depreciation written off	278.38
add Capital Invested during the year—			
(a) Excess of Departmental Payments over Receipts	3,118.38	Live Stock, Valuation	4,117.18
(b) Payments made by Public Works Department	110.00	Stock of Grain	16,225.00
		Sundry Debtors	1,672.00
			3,191.23
less Capital withdrawn during the year—	94,520.19		
Value of Manure and Live Stock supplied to Department of Agriculture	1,040.00		
add Profit for year, from Profit and Loss account	93,180.19		
	225.22		
	93,705.41		
	Rs. 93,705.41		Rs. 93,705.41

DEPARTMENT OF AGRICULTURE

RODRIGUES.

CLIMATIC CONDITIONS—RAINFALL.

MONTHS	OYSTER BAY			SOLITUDE		
		Inches	Rainy days		Inches	Rainy days
January	...	14.80	12	...	13.81	11
February	...	18.66	18	...	16.79	18
March	...	3.16	14	...	2.37	14
April	...	5.35	10	...	7.00	14
May	...	12.10	16	...	12.82	22
June	...	2.55	11	...	2.56	16
July	...	4.54	17	...	5.90	24
August	...	5.22	17	...	5.98	22
September	...	1.52	8	...	1.98	14
October	...	5.57	9	...	7.08	18
November	...	1.03	10	...	.98	13
December	...	1.29	6	...	1.91	12
Total	...	75.79	148		79.18	198

Highest Rainfall in one day :

Oyster Bay On the 10th February: 8.22 inches
 Solitude " " " 5.78 "

GENERAL CONDITIONS.

The year 1937 stands as a record year for the amount of rainfall obtained. Since 1922, the highest figure recorded had been 69.88 inches in the year 1926.

The weather conditions have not been favourable at the beginning of the year. Torrential rains occurring frequently have had a detrimental effect on most of the crops. In February the Island was visited by a cyclone that caused some damage to plantations.

As from April, the rainfall was more evenly distributed, and crops produced good yields from August to November.

Beans and garlic found a ready sale at good prices on the local market. Increased acreage has been placed under tobacco. The yields that have been obtained by farmers who have adopted the cultural methods demonstrated by the Department, indicate the marked benefit that can be realized in following the example set. These farmers have expressed great satisfaction with the values received for their cured leaves ; this fact is an evidence that an amelioration has also been reached in the curing and grading processes.

The flue cured tobacco has not reached a very high grade. The owner of the barn is not yet familiarised with the process of flue-curing and unfortunately he did not get such assistance from the Department in this venture, owing to the absence on leave of the Agricultural Superintendent. "Rodrigues Tobacco" was cultivated by a few farmers for local consumption.

Acacia seeds (*Leucacna glauca*) were obtained throughout the year and were sold to local shopkeepers at Rs. 30 per ton.

Vegetables have not made any further progress this year.

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LIVE STOCK.

Exportation of cattle, pigs and poultry has increased. No disease of economic importance was recorded throughout the year. Pasture and water supply were abundant in the Cattle Walk all the year round. More breeders have been taking advantage of the facilities provided by Government for the improvement of their live stock. The number of breeders paying close attention to the selection of their breeding animals, although having increased, is still in the minority. The difficulty of finding a market for the sale of the inferior type of animals contributes to its maintenance and does not allow progress being effected as rapidly as it should be.

The rearing of guinea fowls gave satisfactory results.

EXPERIMENTAL STATION AND STOCK FARM.

The excessive rains occurring at different intervals and causing heavy floods necessitated constant repairs of the roads, paths, drains and the bridge.

The Overseer's office has been rebuilt and the thatched roof of the Store room was replaced by corrugated iron sheets.

The coconut trees have grown well and produced a great number of fruits. The plantation was weeded on several occasions. The presence of a disease affecting the trunks of the trees has attracted special attention. Samples of diseased trees were forwarded to Mauritius in November, for examination by the Plant Pathologist. In the meantime, disinfectants have been applied to the affected parts.

A portion of land of about one acre has been cleared North of the Station for the planting of selected seeds.

Marked progress is to be recorded in relation to Citrus propagation. The orchard has been enlarged and planted with various species of Orange, Mandarin, Lime and grape fruit imported from Mauritius. As many plants as possible obtained from grafts on local stocks were raised in the nursery. These were planted in the orchard or distributed locally.

"Citrus Canker" has attacked some trees in the orchard. Measures were taken for the eradication of the disease.

All the ordinary routine work of the Experimental Station was duly performed. Varietal experiments with maize and other varieties of crops were continued and those which gave good results were as usual distributed to the public. Further trials with Rhodes Grass seem to indicate its suitability to local conditions. Two other varieties of beans gave satisfactory results. Those obtained with maize (South African Red) were encouraging. The variety South African White has not proved successful. Samples of leaves that showed appearance of stripe disease have been forwarded for examination in Mauritius.

A good crop of Vanilla has been obtained. Young seedlings obtained from new varieties of Tobacco seeds imported from Mauritius were destroyed by the torrential rains that occurred at the beginning of the year. "Amarello" variety was grown for seed selection. Carob (*Ceratonia siliqua*) a tree, the pods of which being rich in sugar, a valuable fattening and nutritious food for cattle has been introduced and is growing satisfactorily at Oyster Bay. Different species of other economic or ornamental trees were also imported.

The following shows the actual distribution of planting material during the year :

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Tobacco seeds and seedlings to	...	19 farmers.
Manioc and sweet potato cuttings to	8	„
Beans to	...	12 „
Selected maize seeds to	...	20 „
7,146 seedlings of trees to	...	41 persons
756 fruit trees to	...	79 „

STOCK FARM.

The building of a stable 42' x 12' for the cattle that is expected early in 1938 is in progress and will be completed in January. The pig styes were repaired and a wall 3½ feet high has been built around the pen of the Black Head Persian sheep, providing for these animals a run of about ¾ of an acre.

The pedigree stud animals stationed at the Stock Farm were appreciated and the breeders have expressed satisfaction with the results obtained from the crossbreeding with their local stock.

CATTLE.

- Sindhi. One bull died of debility. Birth: one heifer.
Present number: 1 bull, 5 cows and 1 heifer. Total 7.
- Friesland. The bull was stationed at Pistache from 18th January to 15th April and at Pointe Coton from 30th May to 17th July. The number of services recorded at the Stock Farm is 33. A fine specimen of the breed was imported from Mauritius in December.
- Afrikander. A bull was received in January and started services in May. Unfortunately the animal died from blood poisoning in July. Two calves and three heifers were born in the island from 5 cows that had been served by the bull.

DONKEY.

- Catalonian. Birth: 2 jacks and 2 jennies. Death: 3 jacks and 4 jennies. One jack has been sold. Present number: 6 jacks and 12 jennies.

PIG.

- Large White. Present number one boar. Number of services 31.
- Large Black. Present number one boar. Number of services 5.
- Yorkshire. The boar was sold in December. Number of service 1.
- Large White x. Large Black. Death one boar. Present number: 1 boar and one sow. Number of services: 28.
- Yorkshire x. Large White. Birth two boars and one sow. 5 boars and 7 sows were sold. Present number: 1 boar and 2 sows.

SHEEP.

- Crossbred Black Head Persian. Present number: 1 ram. Number of services recorded is 56.
- Black Head Persian. Present number: 2 rams and one ewe that have been imported in December.

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POULTRY.

Rhodes Island Red. Present number: one cock, 1 hen and 3 chickens. Provision was made in this year's estimates for the introduction of new breed of cattle and poultry. Orders have been placed and the animals are expected early in 1938.

STAFF CHANGES AND LEAVE.

Overseer S. Oree was transferred to Mauritius in November and was replaced in December by Head Overseer H. Julien.

The Stock man returned from leave in January.

The Agricultural Superintendent was granted leave from the 27th May and resumed duties on the 6th November. During his leave which was spent in Mauritius, he paid frequent visits to Head Office to confer with the Director of Agriculture and the Senior Agricultural Officer. He visited the Agricultural Stations and in company with the Veterinary Officer several herds of cattle. Together with the Tobacco Officer he visited also tobacco plantations in different districts. He had interviews with the Conservator of Forests with whom questions relating to Forestry work of Rodrigues were discussed. He also accompanied the Assistant Conservator on visits of inspection.

On several occasions he worked together with the Irrigation Engineer on the plan for a proposed Irrigation dam at La Ferme and conferred with the Director of Public Works, discussing matters concerning the water supply and the loading of cattle in Rodrigues.

AGRICULTURAL INSTRUCTION.

Frequent visits were paid by the Agricultural Superintendent to the outlying districts and every opportunity was taken to give advice on various matters of agricultural interest.

No provision had been made in the Estimates of 1936-37 for the reconditioning of lands and consequently this means of popularising agricultural improvements amongst planters has not been employed this year. A sum of Rs. 1,500 has been provided for in the Estimates 1937-38 and work is to be carried out during the early months of 1938.

The position as regards school gardens is at a standstill. The school Manager went on leave and has not yet signed the application forms for the registration of the gardens.

In order to encourage better cultivation, the Prize Holding Scheme has been re-established. The competition is to be held in May 1938. A sum of Rs. 260 has been provided for this purpose in this year's Estimates.

IMPROVEMENT OF PASTURES.

The question has been taken in hand seriously and progress made. Twelve acres in the Cattle Walk were planted with trees, a fair amount of undesirable plants destroyed and good species of grass well established. Provision was made in this year's Estimates for the planting with trees of about 50 acres of land that had been selected on the South West of the island. Seedlings of *Casuarina* sp., *Terminalia arjuna* and *Cassia siamea* have already been raised for that purpose in the nursery. The programme comprises also increased acreage of land to be placed under good species of

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pasture grass ; building of dams and drinking troughs in the Cattle Walk to provide pure drinking water to animals and silos to be built in different localities with a view to investigating the possibilities of fodder conservation.

EXTENSION OF COCONUT PLANTATION.

Work is in progress as regards the fencing with a wall, 4 feet high, of an area of 10 acres of land selected at Baie du Nord for planting coconut trees.

EXAMINATION OF PLANTS.

The consignments of plants, fruits and vegetables imported have been regularly examined. On several occasions these had to be entirely or partly destroyed. New regulations in relation to importation of plants etc. with a view to affording greater protection against introduction of pests and diseases are under consideration.

IRRIGATION.

All the survey work in relation to the construction of a dam for irrigation purposes has been completed. A plan giving all the required information has been forwarded to the Public Works Department.

WATER SUPPLY.

A new dam has been built at La Ferme to replace the old which was damaged last year.

Concrete basins to form water cushions to prevent erosion have been built at Cascade Pigeon dam. All these works were carried out under the supervision of the Agricultural Superintendent.

VISITS.

The Acting Senior Agricultural Officer visited the Island in November. He made several inspections in different localities and was accompanied by the Agricultural Superintendent.

Ranger Marie of the Forest Department also inspected the forest plantations in December.

RECEIPTS.

The sale of forest produce amounted to Rs. 1,681.89. Sales from the Experimental Station and Stock Farm amounted to Rs. 181.81.

RE-AFFORESTATION.

Planting.

15,067 <i>Callophyllum</i> sp.	12,647 <i>Terminalia arjuna</i> .
4,473 <i>Cassia siamea</i> .	4,517 <i>Imbricaria</i> sp.
15,557 <i>Eucalyptus tereticornis</i> .	400 <i>Albizzia procera</i> .
317 <i>Terminalia catappa</i> .	66 <i>Bassia latifolia</i> .
11,723 <i>Casuarina equisetifolia</i> .	

The total number of trees planted was 64,767, and the area was about 45 acres.

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RECRUITING.

7,120 <i>Casuarina equisetifolia</i> .	295 <i>Cassia siamea</i> .
565 <i>Eucalyptus tereticornis</i> .	50 <i>Imbricaria</i> sp.
750 <i>Terminalia arjuna</i> .	387 <i>Terminalia catappa</i> .
586 <i>Callophyllum</i> sp.	

Very good growth was observed during the year in the forest trees planted all over the Island. The plantations were attended to whenever necessary.

EXPORTS.

	1937	1936	1935
Acacia seeds	10,107 Bags	10,097 Bags	10,764 Bags
Beans	506 "	516 "	650 "
Maize	1,284 "	1,080 "	3,036 "
Garlic	377 "	319 "	489 "
Onion	57 "	54 "	48 "
Peas	2 "	2 "	7 "
Tobacco	628 Bales	140 Bales	106 Bales
Pumpkin	1½ Ton	—	40 Bags
Lemon	15 Cases	—	—
Chillies	2 "	6 Cases	—
Vanilla	1 Tin	1 Tin	—
Gum	8 Bags	—	—
Manure	67½ Tons	378 Tons	320 Tons
Guano	203½ "	45 "	70 "
Timber	188 Pieces	134 Pieces	75 Pieces
Vacoas Bags	1,250	—	—
Cattle	596 Heads	448 Heads	366 Heads
Pigs	2,303 "	2,046 "	2,097 "
Goats	4,593 "	2,898 "	3,359 "
Sheep	741 "	—	—
Goats and Sheep	—	2,462 "	1,380 "
Dogs	28 "	5 "	4 "
Turkeys	424 "	314 "	283 "
Fowls, ducks and guinea fowls	33,140 "	30,991 "	21,301 "
Donkey	1 Head	8 Heads	—
Preserved Meat	3 Barrels	—	—
Salt fish	3,866½ Bales	1,945 Bales	2,241 Bales
Salt fish and Octopus	—	2,099 "	1,985 "
Octopus	807 "	—	—
Hide	8 "	9 "	3 "

RENÉ JAUFFRET,
Agricultural Superintendent.

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PART III

1.—Staff Movements.

Honourable G. E. Bodkin, Director of Agriculture, left for Europe on leave of absence on the 23rd October, 1937. Mr. C. A. O'Connor was appointed Acting Director of Agriculture and Principal Agricultural College and Mr. M. Burrenchobay, Acting Registrar Co-operative Credit Societies during Mr. Bodkin's leave.

Mr. A. North Coombes was appointed Acting Senior Agricultural Officer consequent on the appointment of Mr. C. A. O'Connor as Acting Director.

Mr. A. Glendon Hill proceeded on foreign leave of absence on the 6th February, 1937, prior to his appointment as Director of the East African Agricultural Research Station, Amani, Tanganyika Territory.

Dr. W. F. Jepson was appointed Entomologist and Lecturer in Zoology and Entomology, College of Agriculture on the 23rd March, 1937. He arrived in this Colony on the 5th August, 1937.

Mr. N. Craig, Senior Chemist, Sugarcane Research Station, returned from European leave of absence on the 18th February, 1937.

Mr. E. F. S. Shepherd, Plant Pathologist, left on leave of absence to England on the 22nd January, 1937. During his leave he was appointed Plant Pathologist in the Gold Coast Department of Agriculture on 1st September, 1937.

Consequent on the leave of absence granted to Mr. E. F. S. Shepherd, Mr. G. Orian was appointed Acting Plant Pathologist.

Mr. G. Corbett, Government Tobacco Officer, left on leave of absence for Europe on the 21st January 1937 and resumed duty on the 3rd November of the same year.

Mr. P. Régnard, Second Phytalus Officer, left for South Africa on the 1st of May 1937 on official mission in connection with the research of Phytalus parasites.

Mr. F. Berchon, Assistant Chemist and Assistant Lecturer in Chemistry, Agricultural College, left on European leave on the 8th June, 1937.

Mr. H. Julien, Overseer, was transferred to Rodrigues Agricultural Experiment Station on the 4th December, 1937, in the room of Mr. S. Oree who returned to Mauritius on the 23rd November 1937.

Mr. J. Vinson, Scientific Assistant, was granted three months' vacation leave of absence from the 23rd August to the 22nd November 1937.

Dr F. E. Lionnet, Veterinary Officer paid an inspection visit to Vohémar, Madagascar in connection with the importation of cattle for beef purposes. He left the Colony on the 23rd April and returned on the 2nd May 1937. During his absence, Mr. Y. Lefébure, Stock Inspector acted as Veterinary Officer.

Mr. R. Jauffret, Agricultural Superintendent Rodrigues was granted leave of absence to be spent in Mauritius. He arrived in this Colony on the 30th May and resumed duty in Rodrigues on the 6th November 1937.

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Mr. A. North Coombes, Acting Senior Agricultural Officer left on inspection visit to Rodrigues on the 4th November, 1937, and returned to Mauritius on the 23rd of the same month.

Mr. G. Mazery, Scientific Assistant, Sugarcane Research Station, returned from leave of absence to Europe on the 10th March, 1937.

2.—Stations.

The headquarters, offices and laboratories of the Department of Agriculture are located at Réduit, some 1,000 feet above sea level. The following principal areas of land are utilised and controlled by the Department for experimental field work in all its various phases: Réduit, 34.86 arpents; Barkly (altitude 700 feet) 13.7 arpents; Mon Plaisir, Pamplémousses, (altitude 220 feet) 9.62 arpents; La Ferme (altitude 420 feet) 12.82 arpents. A number of minor areas in different parts of the Island are leased or occupied rent free for experimental work, principally in connection with sugar and pineapple. The local "arpent" is slightly greater than the English acre.

3.—Revenue and Expenditure.

REVENUE.

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	Rs.	c.
Sale of Plants	2,098.00	
„ Sugarcane	5,320.30	
„ Pineapple and Pineapple Suckers	315.36	
„ Tobacco leaf	1,194.25	
„ B.C.G. Vaccine	465.25	
„ Dairy produce to the Public and Govt. Hospitals	26,668.35	
„ Pois Mascate	225.00	
„ Litchi crop	241.28	
„ Vanilla	167.63	
Analytical fees	205.00	
Miscellaneous	326.26	
Contribution from Co-operative Credit Societies	750.00	
„ „ Agricultural College Funds towards cost of Sugarcane Research Station	18,000.00	
Contribution from Agricultural College Funds towards salaries and allowances of Officers of the Department of Agriculture...	23,450.00	
Contribution from Agricultural College Funds towards pension of lecturers at the Agricultural College	6,210.00	
Contribution from Sugar Industry Reserve Fund towards cost of the Sugarcane Research Station	18,000.00	
From Stock breeders for Importation of bulls	11,900.00	
Special cess on Sugar exports for Phytalus destruction (Ordinance No. 38 of 1933)	93,903.72	
Total ...	Rs. 209,440.40	

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EXPENDITURE.

	Rs.	c.
Personal Emoluments	239,177.11	
Maintenance of Gardens	6,324.30	
Prevention of Plant Pests and Diseases	2,516.95	
Prevention of Animal Diseases	937.62	
Upkeep of Stock	4,494.68	
Maintenance of Experiment Stations	19,478.60	
Apparatus, Chemicals and Laboratory Supplies	2,899.53	
Nursery	3,163.46	
Destruction of Phytalus	32,664.00	
Registration of Agricultural Chemists	5.52	
Upkeep of La Ferme Tobacco Experiment Station	4,632.16	
Telephone	438.99	
Travelling	13,772.66	
Railway Services	2,208.57	
Passages	10,503.31	
Incidentals	923.74	
Government Dairy	27,874.73	
Importation of Friesland bull	1,774.50	
Representation of Colony at Conferences abroad	270.00	
Purchase of Outboard Motor for Agricultural Dept. Rodrigues...	395.00	
Stock Improvement at Rodrigues	1,615.39	
Purchase of Live Stock for Rodrigues	10.45	

SUGARCANE RESEARCH STATION.

Laboratory Equipment	2,390.30
Labour and Field Equipment	9,598.00
Travelling and Railway Services	2,095.79
Incidentals	497.47
Extra Scientific Assistance	976.05
Total	Rs. 391,138.88

4.—Legislation.

The following Ordinances, Proclamations and Notifications were issued during the year:

Ordinance No. 4 of 1937.—To amend the Animal Diseases (Consolidation) Ordinance, 1925.

Proclamation No. 5 of 1937.—To remit Stamp duties and Registration fees chargeable on instruments executed by or on behalf of "The Rivière des Créoles Co-operative Credit Society."

Proclamation No. 13 of 1937.—To remit Stamp duties and Registration fees chargeable on instruments executed by or on behalf of "The Saint Paul Co-operative Credit Society."

Government Notice No. 12 of 1937.—Regulations under The Animal Diseases Consolidation Ordinance 1925.

Government Notice No. 35 of 1937.—Regulations under The Animal Diseases Consolidation Ordinance 1925.

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5.—Board of Agriculture.

The Board of Agriculture established under Ordinance 30 of 1912 consisted of:

His Excellency the Governor, President.

The Director of Agriculture, Vice President.

The following members were appointed for 1937:

The Honourable M. Martin, C.B.E.	Mr. H. G. Ducray
„ „ R. Gujadhur	„ L. Larcher
„ „ J. Leclézio, C.B.E.	„ Pandit Boloram
„ „ P. Hugnin	„ P. de Sornay, <i>Ch. Leg. Hon.</i>
„ „ T. Mallac	„ F. Nicholls
Captain H. G. Hitchcock, O.B.E.	„ H. Lincoln
Mr. G. Antelme	„ R. M. Monk
„ G. Clarenc	„ L. H. Garthwaite
„ J. de Spéville	„ A. Lagesse.

The Honourable M. Martin, C.B.E. and Captain H. G. Hitchcock, O.B.E., who died during the year, were replaced by Mr. F. N. Coombes and by the Honourable H. G. Robinson, respectively.

During the year 1937 there was one meeting of the Board held on October 15th, at which the following question was discussed:

Request for assistance from the Colonial Development Fund in the biological control of the Sugarcane Moth Borers.

6.—Publications.

The following departmental publications were issued during the year.

BULLETINS.

- (a) Catechism of Co-operative Credit.
- (b) A Revised List of Plant Diseases occurring in Mauritius.
- (c) Germination Experiments on Pois Mascate. ("*Mucuna Deeringiana*" (Bort) Holland).
- (d) The Gummy Disease of the Sugarcane.
- (e) Sugarcane Research Station Bulletin. No. 11. Sugarcane in Mauritius. A revue of the present position with respect to its cultivation and manuring.
- (f) Sugarcane Research Station Bulletin. No. 12. Further investigations on the Root System of Sugarcane. ...
- (g) Sugarcane Research Station Bulletin. No. 13. An Annotated Catalogue of Sugarcane varieties in Mauritius, present and past.
- (h) Sugarcane Research Station Bulletin. No. 14. A preliminary study of root characters as affecting drought resistance in two sugarcane varieties and in their seedlings.

LEAFLET.

Chlorine in Rain Water in Mauritius.

REPORTS.

- (a) Annual Report of the Department of Agriculture for 1936.
- (b) Report of the Working of the Co-operative Credit Societies for the year ending 30th June 1937.

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- (c) Report of the College of Agriculture for 1936.
- (d) Final Compilation of Sugar production for the 1936 sugar crop.
- (e) Preliminary Forecast of Sugar production for the 1937-38 sugar campaign.
- (f) Revised Forecast of Sugar production for the 1937-38 sugar campaign.
- (g) Preliminary compilation of Sugar production for the 1937-38 sugar campaign.
- (h) Seventh Annual Report of the Sugarcane Research Station for the year 1936.

The following articles from Officers of this Department were published in the *Revue Agricole* :

1. Résultats d'Essais comparatifs d'engrais effectués en 1935-36 à Deux Bras et à Mon Trésor by A. North Coombes, B.Sc.
2. Le refroidissement des masses cuites by R. Avice.
3. The Polarization of Mauritius Raw Sugar by L. Baissac, F.C.S.
4. Le Temps et la Coupe by M. Koenig.
5. Les Larves des Coléoptères lamellicornes de l'Ile Maurice by Jean Vinson.
6. Mission Entomologique à Madagascar en 1936 by P. Regnard.
7. Notes sur l'introduction, la distribution et l'élevage de la mouche tachinaire importée de Madagascar, d'Août à Décembre 1936 by L. André Moutia.
8. Notes préliminaires sur une maladie du Palmier à Maurice, causée par le Bactérium vasculorum (Cobb) Gr. Smith by G. Orian.
9. Une méthode pour déterminer la surface absorbante du système racinaire de la canne à sucre et quelques résultats préliminaires by H. Evans.
10. Résumé du Septième Rapport Annuel de la Station des Recherches sur la canne à sucre pour l'année 1936 by A. Glendon Hill.
11. Résumé du Rapport de la Section de Biochimie pour l'année 1936 by Pierre Halais.
12. Résumé du Rapport Annuel de la Section de Physiologie Botanique de la Station de Recherches sur la canne à sucre pour l'année 1936 by H. Evans.
13. Les Echelles Saccharimétriques et leurs charges type by Louis Baissac.
14. L'Appareil Ditmar Jansse pour le contrôle du travail des vides by R. Avice.
15. Un nouvel hôte naturel du Bactérium vasculorum (Cobb) Gr. Smith, by G. Orian.
16. Sur un procédé peu connu pour la conservation des collections d'insectes dans les pays chauds by Jean Vinson.
17. Le Maïs dans l'Alimentation des Troupeaux by Y. Lefébure.
18. Notes sur l'Introduction à Maurice de nouveaux prédateurs de la cochenille de cocotier *Aspidiotus destructor* Sign. by L. André Moutia.
19. Notes sur la variété M.171/30 by G. E. Bodkin.

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20. *Le Temps et la Coupe* by M. Kœnig.
21. *Résultats d'Essais comparatifs d'engrais effectués en 1936-37 à Deux Bras et à Mon Trésor* by A. North Coombes.
22. *Contre le Phytalus* by G. E. Bodkin.
23. *Projet des travaux de recherche se rapportant au contrôle biologique des borers de la canne à sucre à Maurice* by W. F. Jepson.

7.—General.

The Director of Agriculture served as a member of the Council of Government. He acted as Chairman of the Agricultural College Board, the Phytalus Advisory Committee, the Tobacco Board, the Allotments' Organisation Committee, and the Research Advisory Committee of the Sugarcane Research Station. He also served on the following Boards and Committees: The Board of the Mauritius Institute, the Forest Board, the Customs Tariff Advisory Board, the Mauritius Hemp Producers' Syndicate (Executive Committee), The Stock Breeders' Association, the Finance Committee of the Council of Government and the Fisheries Permanent Advisory Committee.

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APPENDIX

MEAN MONTHLY RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT THE STATIONS UNDER THE CONTROL OF THE DEPARTMENT OF AGRICULTURE

JANUARY TO DECEMBER, 1937

STATIONS AND ELEMENTS:

Central Experiment Station, Réduit—

AIR TEMPERATURE, Minimum °C
Maximum °C
Mean

RELATIVE HUMIDITY, Percentages
RAINFALL, Depth of Rain, mm

SUNSHINE, No. of Days
Registered Sunshine, hours
Percentage of Possible

Botanical Gardens, Curepipe—

AIR TEMPERATURE, Minimum °C
Maximum °C
RELATIVE HUMIDITY, Percentages

RAINFALL, Depth of Rain, mm
No. of Days

Barkly Nursery, Beau Bassin—

AIR TEMPERATURE, Minimum °C
Maximum °C
RELATIVE HUMIDITY, Percentages

RAINFALL, Depth of Rain, mm
No. of Days

Abercrombie Nursery, Port Louis—

AIR TEMPERATURE, Minimum °C
Maximum °C
RELATIVE HUMIDITY, Percentages

RAINFALL, Depth of Rain, mm
No. of Days

Royal Botanical Gardens, Pamplenny—

RAINFALL, Depth of Rain, mm
No. of Days

Remarks.—The figures for the Relative Humidity are the means of readings at 9h and 15h. Temperature figures, at Réduit are obtained from hourly measurements of thermograms standardised daily at 9h and 15h. At the other stations, maximum and minimum thermometers are read daily at 8h and 15h. Rainfall is measured at 9h and the amount entered for the day.

	1	2	3	4	5	6	7	8	9	10	11	12	Totals	Mean
...	21.5	22.6	22.0	20.0	19.0	15.6	15.9	14.8	16.5	16.8	19.0	19.9	—	18.6
...	27.1	27.8	27.0	26.4	23.9	22.4	21.8	21.4	23.0	24.2	26.4	27.1	—	24.9
...	24.0	24.9	24.2	22.7	21.1	18.6	18.5	17.8	19.3	20.2	22.4	23.2	—	21.4
...	72.4	76.9	74.3	71.3	74.8	71.9	72.7	69.7	68.3	62.8	63.2	65.3	—	70.3
...	325.5	233.8	422.4	63.7	206.4	69.1	54.2	80.3	69.2	50.2	77.9	43.9	1,686.6	—
...	29	26	28	25	27	24	22	26	24	16	17	14	278	—
...	233.8	196.7	205.5	347.8	181.7	191.1	202.9	242.5	227.5	254.0	278.0	227.3	2,788.8	—
...	57.4	55.2	54.5	61.0	52.7	58.4	59.4	68.6	63.5	65.5	71.2	55.2	—	63.3
...	19.4	20.1	19.4	18.4	17.6	*	14.4	13.4	15.4	14.7	17.6	17.8	—	—
...	25.7	27.2	26.2	25.5	24.3	*	21.4	19.1	21.5	22.5	24.7	25.9	—	—
...	86.7	87.7	87.5	85.7	87.0	*	87.8	91.3	84.0	78.4	81.5	83.1	—	—
...	624.1	335.2	846.0	151.5	509.2	*	261.8	319.5	243.0	165.7	232.0	119.5	—	—
...	31	26	29	29	31	*	31	31	30	30	30	28	—	—
...	21.2	22.2	22.0	21.4	18.3	15.9	15.7	14.5	16.1	17.2	20.3	19.9	—	18.7
...	29.8	30.4	29.3	29.5	27.3	25.2	25.3	25.5	25.9	27.6	29.5	30.0	—	27.9
...	72.4	69.3	76.9	71.5	71.3	71.3	73.2	70.1	66.1	59.6	61.0	65.7	—	69.0
...	237.5	294.4	280.8	48.6	177.4	77.6	47.9	34.0	36.1	31.6	57.3	65.5	1,388.7	—
...	16	21	15	8	19	13	19	17	16	9	5	8	166	—
...	23.4	24.1	23.8	22.5	20.5	20.6	17.6	17.6	19.6	19.4	22.3	22.6	—	21.2
...	30.8	31.2	30.0	30.0	27.8	26.2	20.2	25.7	27.0	28.8	31.4	32.1	—	28.9
...	69.4	70.1	73.3	64.3	70.9	69.9	65.3	60.8	61.1	54.9	56.4	56.8	—	64.4
...	268.0	233.6	319.4	56.8	262.3	42.7	51.8	49.3	27.0	34.4	101.5	26.2	1,463.0	—
...	19	21	17	8	18	16	16	15	17	12	15	13	187	—
...	387.1	175.8	409.5	98.8	371.0	49.5	124.5	109.0	75.5	51.8	140.8	39.0	2,032.3	—
...	26	22	21	19	24	15	22	24	25	16	19	11	244	—

* No observations.

